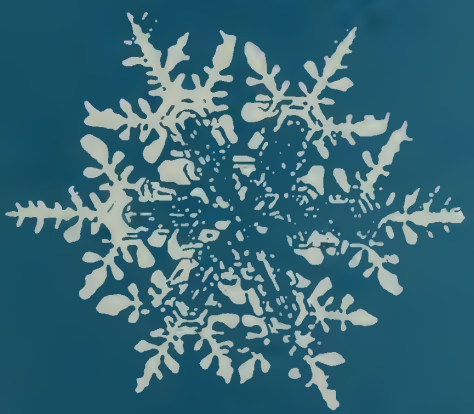
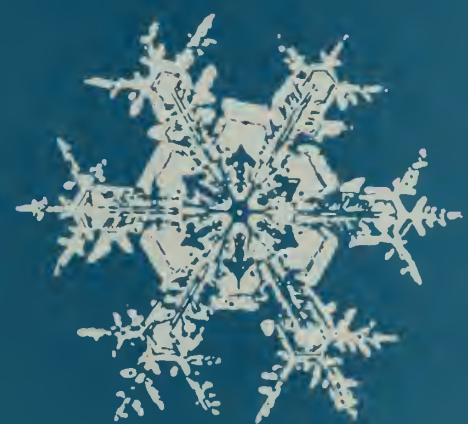


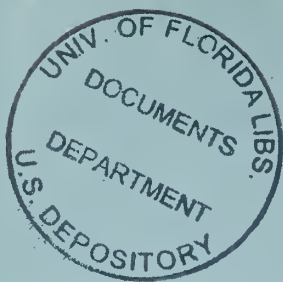
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NOVEMBER-DECEMBER 1980

Infantry

A PROFESSIONAL JOURNAL FOR THE COMBINED ARMS TEAM





A Department of the Army Publication

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A PROFESSIONAL JOURNAL FOR THE COMBINED ARMS TEAM

November-December 1980

Volume 70, Number 6

ARTICLES

16 SOVIET TACTICS FOR OVERCOMING NATO ANTITANK DEFENSES: PART 2

C.N. Donnelly

24 A SOVIET VIEW: ATTACK FROM MARCH COLUMN

Colonel V. Kotikov

27 COLD WEATHER OPERATIONS: PART 2

INFANTRY Staff

31 THE MILITARY SIDEARM

Lieutenant Richard C. Farnsworth

FORUM AND FEATURES

10 WINTER TRAINING IN ALASKA

Major David R. Kiernan

12 PSYCHIATRIC CASUALTIES

Major Brian H. Chermol

14 ANTITANK GRENADES

Captain Larry A. Altersitz

TRAINING NOTES

34 WEAPON MAINTENANCE

Captain Merrit P. Drucker

36 MAINTENANCE WEEK

Captain Jack H. Cage

38 MANEUVER COMMANDS

Major William L. Howard

40 WHAT'S YOUR DRIFT?

Sergeant First Class Willie G. Wells

41 VEHICLE IDENTIFICATION

Norman D. Smith

George M. Gividen

43 SWAT

Billy A. Arthur

45 MORTAR PLATOON WIRE NET

Master Sergeant Arnold T. Bloodworth

DEPARTMENTS

2 COMMANDANT'S NOTE

5 INFANTRY NEWS

47 PAST TIMES

48 ENLISTED CAREER NOTES

51 OFFICER CAREER NOTES

53 BOOK REVIEWS

56 INFANTRY LETTERS

FRONT COVER

Winter weather is a dangerous adversary, and each leader must first conquer the environment before his soldiers can fight in any other battle.



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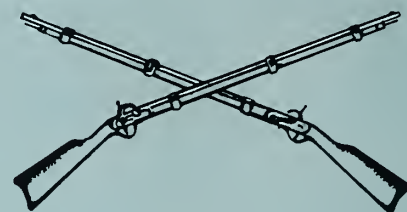
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Commandant's NOTE



MAJOR GENERAL DAVID E. GRANGE, JR.

WELCOMING THE NEW INFANTRYMAN

In the July-August 1980 issue, I discussed the urgent need for our infantry unit commanders to identify now the junior noncommissioned leaders in their units who could, on a moment's notice, take over teams, squads, sections, or platoons in combat and fight on. Associated with this need was the vital requirement to groom them at every opportunity to meet this challenge. I titled that article, "Your First Replacements Have Already Arrived."

In this article I want to zero-in on the replacement infantry privates who are joining your squads, platoons, companies, and battalions every week. These are the fine young soldiers who have trained here at the "Home of the Infantry" — with the 1st Infantry Training Brigade. This year 32,500 of these young American volunteers will pass through the Brigade, and the challenge to all of us who have the responsibility for training and leading them is a solemn one.

This article has two goals — to tell you about the training and leadership that these infantry soldiers receive at Fort Benning to become battle-ready infantrymen; and to discuss the importance of the way you receive these soldiers in your units.

One Station Unit Training (OSUT) became a reality in August 1980. While most of you are familiar with the OSUT concept, many may not understand the training techniques that are used to produce a qualified infantry soldier. As commanders, you need to understand the procedures followed during initial entry training in order to realize the tremendous challenge that is passed on to you. That challenge is to maintain the standards set by the drill sergeants and the cadre of the 1st

Infantry Training Brigade in the reception, development, and training of infantry soldiers. My purpose here is to describe the building block process used in initial entry training so that you can continue the training process.

The process begins with the reception of new soldiers at the Fort Jackson Reception Station and ends with proud parents watching even prouder soldiers march across the parade ground on graduation day. The building process includes several important phases:

- Reception and Orientation.
- Establishing and Attaining Goals.
- Developing the "Whole" Man.
- Graduating a Winner.

Reception and Orientation. This process is important as the foundation on which to build your ultimate goals. New soldiers are met at the Fort Jackson Reception Station by selected drill sergeants from the training companies to which they will be assigned. These drill sergeants demonstrate a sense of concern for the new soldiers, which will be maintained throughout the training period, and establish the standards that will be followed in the building block process.

When they arrive at Fort Benning, the soldiers are inprocessed efficiently and quickly and their initial basic needs are met. Immediately after inprocessing, a series of soldier orientations begin. The brigade commander sets the tempo of training by formally welcoming the soldiers and issuing them a challenge — to succeed at becoming infantry soldiers and to be standing on the graduation field 12 weeks later. Battalion and company commanders then conduct orientations on the train-

ing cycle, centered on establishing tangible goals for each soldier.

An important policy is established. These men are not trainees, but soldiers. They are treated as soldiers, expected to act like men, and the word "soldier" is reinforced throughout the building process. Drill sergeants then conduct personal and private interviews with each soldier to learn his aspirations, desires, and background. This reception and orientation process establishes a sense of concern for the soldier, enlightens him on the challenges that lie ahead, and establishes the foundation required to build upon.

Establishing and Attaining Goals. With our new soldiers, we concentrate on establishing tangible goals in two distinct phases. During the orientation process, we develop a philosophy of being winners. Seven training principles that emphasize preparedness and making a commitment are developed with the acronym "WINNERS." The seven principles we teach are:

- Willingness to defend the country.
- Infantry skills.
- Never fail the team.
- Never quit.
- Endurance.
- Rugged mental attitude.
- Spiritual soundness.

We teach each soldier that he must endure in order to be a success. He is challenged by physically demanding training, extended marches, and long hours in the field. To endure, he has to maintain a *rugged mental attitude*. With the proper attitude, he will prevail and *never quit*. And if he does not quit, he will be a success to himself and *never fail his team*. In order to support his team, he must be able to perform the *infantry skills* that he is taught during his OSUT training. *Spiritual*

soundness and attending worship services are stressed throughout the training cycle. Finally, with the six principles stated above, the final emphasis is placed on his *willingness to defend his country*. Never losing sight of this principle throughout the training process, he will develop a sense of urgency in learning his required skills. He will be proud of his Army and his Infantry heritage. These principles are presented in the language of soldiers and are reinforced by the acronym WINNER, which is what we want him to become.

Next, goals are continually established throughout the training cycle. The basis for these goals is the healthy atmosphere developed by individual, platoon, and company competition. An example of productive goal setting is exhibited in the physical conditioning program. The brigade goal is for each company and individual to score 450 points on the advanced physical fitness test. Companies now average 446.1 on the APFT throughout the Brigade. This is equal to taking a civilian and conditioning him in only 71 days to score 446.1 points on the APFT. The Brigade average continues to climb, and more than 61 percent of these soldiers are surpassing the 450 goal.

Developing the "Whole" Man. At the center of our building block philosophy is the principle of developing the soldier to reach his full potential. In order to accomplish this task, we must develop the man, not only in training each week, but also in several other important functional areas.

We stress spiritual soundness. Our Army chaplains conduct orientations for each new company and explain the different services provided by the Chaplain Corps. Every Sunday, soldiers are encouraged to attend chapel services or specially arranged services within the community.

We attempt to turn the "television generation" on to outdoor sports by conducting battalion field days. Field days consist of competitive individual and team sporting and endur-

ance events. Other sporting events are also stressed — soldiers, for example, are provided free admission to professional sporting events within the community and on post.

Discipline is a key ingredient in the development of the "whole" man. This ongoing process is stressed and becomes a reality to the soldiers, and they learn very early to respect their officers and NCOs.

Finally, we give our soldiers enough work to keep them busy, training six days a week during the training cycle. The soldiers are challenged every day with new skills to learn and master. They come to value their training and their off-duty time. They develop a sense of urgency because of the demanding training cycle and the goals that are set.

The aspects described under the topic of developing the "whole" man are continued. A lack of constructive development would weaken the framework that had been developed during initial entry training.

Graduating a Winner. I am firmly convinced that we are producing a better infantry soldier today than ever before. As I watch those proud soldiers parade past their parents and relatives each week, I feel a true sense of pride and satisfaction. We do graduate winners, soldiers who are well prepared to take their new positions in infantry units around the world.

I hope you see the challenge that lies before you as field commanders. We provide you with a man who is well trained, disciplined, motivated, and willing to do the job. He is a "whole" man, a soldier, much more mature than when he entered the service, and I cannot stress enough how important it is — both to the individual and to the unit — for you to receive these new infantrymen properly. I found out very quickly as a division commander in Korea that the greatest challenge with my replacements was to maintain their zeal, their discipline, and their professional interest in being good soldiers. There is a tremendous feeling of loneliness and uncertainty, in other words, a great let-down, for a young soldier after he has gone through 12 weeks of vigorous training. At the

moment when he probably needs peer support more than ever before, the members of his squad and platoon are scattered to the four-winds: some go to jump school, others return to their National Guard or Reserve units, but most of them strike out as individuals to join units around the world. No longer is there a drill sergeant to turn to for advice or guidance. And there is no concerned first sergeant or company commander to see to his every need, every hour of every day. There is only a package containing his records and a set of orders that will carry him to a distant destination.

When he finally arrives he is tired, travel weary, and apprehensive. It is so important in this critical period in his career that he be met with concern, compassion, and dignity. He needs an early encounter with his new leader. This meeting should serve to calm his apprehension, to insure him that he is a most welcome new member to his outfit, to establish an understanding of the ground rules of his new outfit, and to determine what his aspirations as a soldier are. He must be given an orientation of the post and its surroundings. He should get his equipment and weapon early — and fire his weapon as soon as possible. He must know his unit's mission and how he is expected to support that mission. In short, he must feel wanted.

In most outfits these actions occur every day and are accomplished in a completely professional fashion. But I also see letters, happily very few letters, written by young infantrymen to their former drill sergeants in the 1st Infantry Training Brigade that paint a different picture. If this article serves to help one more infantryman join his outfit in a more efficient and humanistic manner, it has been worth the effort.

I urge all commanders to take a look at their replacement reception activities. I also urge all commanders who visit Fort Benning to look at the training that goes on in the 1st Infantry Training Brigade and, if possible, to witness one of the graduation ceremonies. I guarantee a pleasant and eye-opening experience.



The Infantry School maintains two hot lines — one for general questions and comments, the other for ARTEP questions and comments. If you have a general question to ask, or a general comment to make, just dial AUTOVON 835-4487, or commercial area code 404, then 545-4487. Your question or comment will be sent to the agency that can best help you and you'll receive a reply within 48 hours, if you leave your AUTOVON or commercial telephone number.

The ARTEP hotline is handled by the School's Collective Training Branch, Directorate of Training Developments. This hotline supplements the comment sheets that are found in the Trainer-Evaluator portion of the ARTEP documents. The number is AUTOVON 835-4759, or commercial area code 404, then 545-4759. The recording equipment now in use limits messages to 30 seconds, so if you have a lengthy question or comment, send it in writing to Commandant, USAIS, ATTN: ATSH-I-V-ET, Fort Benning, GA 31905.

Remember The Infantry School Hot Lines

INFANTRY NEWS



THE ARMY HAS ANNOUNCED that it will keep the officer advanced course program. The Review of Education and Training (RETO) Study had recommended the elimination of these courses in favor of short, job-specific courses that officers would attend in a temporary duty status enroute to new assignments, or upon assumption of new duty positions. After a careful examination of this and other alternatives proposed by all of the service schools, though, one consistent finding kept emerging: the officer basic course, followed by service in the field, then assignment to the advanced course provided the right training at the right time in the careers of lieutenants and captains to prepare them to train, command, and serve in staff positions through the brigade level.

This decision will keep the present resident training structure intact, with new training for senior captains added. This will include the Combined Arms and Services Staff School at Fort Leavenworth, which senior captains will attend between their seventh and ninth years of service. The school will prepare the officers to function at higher staff and installation levels.

The Officer Job/Task Analysis Program currently being conducted Army-wide will also be continued. The Infantry School is one of the four pilot schools taking part in this program.

In addition, the Chief of Staff of the Army has reaffirmed his support of the Military Qualification System (MQS). Under this system, an officer will be required to progress through three different levels of military skills: Military Qualification Skill Level 1 (Precommissioning), Military Qualification Skill Level 2 (first through third year of service), and Military Qualification Skill Level 3 (fourth to tenth year of service), and will be certified at each skill level.

Each MQS will be divided into two

components: Military Skills and Knowledge, and Professional Military Education. The Military Skills and Knowledge component will consist of the skills and knowledge that an officer needs to perform successfully in his specialty.

AN INFANTRY BRIGADE AND BATTALION COMMANDER'S conference was recently hosted by the Infantry School. The conference served to give the attendees the latest information the School has on training developments, combat developments, weapons, doctrine, and tactics. It also served as a vehicle by which the attendees could let the personnel of the Infantry School know about the problems that commanders in the field face every day and to suggest ways of improving the School's products that are sent to units in the field.

Seminars were held on current mechanized infantry doctrine, IFV doctrine and training concepts, and training the leaders of our future combined arms teams. The conference also established the foundation for a wide range of topics that will be discussed at the infantry division commanders conference which will be held at the Infantry School in early December.

THE PROGRAM OF INSTRUCTION for the Infantry Officer Basic

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Course has been changed to place increased emphasis on maintenance and maintenance management. The officers will also receive detailed instruction on PLL procedures.

The change was accomplished by reducing the time the officers spend in classrooms and by increasing the time they spend working with procedures and equipment in field locations.

HOW-TO-FIGHT literature update:

- **FM 7-8, The Infantry Platoon and Squad.** In the camera-ready mechanical stage of development and will be published by the end of 1980.

- **FM 7-10, The Infantry Rifle Company.** In the final draft stage of development and will be published by mid-1981.

- **FM 21-75, Combat Skills of the Individual Soldier.** In the final draft stage of development and will be published by the end of 1981. NOTE TITLE CHANGE.

- **Appendix H, The Airborne Infantry Battalion, Change 1 to FM 7-20, The Infantry Battalion.** In the comprehensive dummy stage of development and will be published by the end of 1980.

- **Appendix I, The Ranger Battalion, Change 1 to FM 7-20, The Infantry Battalion.** In the comprehensive dummy stage of development and will be published by the end of 1980.

- **FM 90-4, Airmobile Operations.** In the camera-ready mechanical stage and will be published by the end of 1980.

- **FM 90-5, Jungle Operations.** In the final draft stage of development and will be published by mid-1981.

The following are new publications:

- **FM 90-10-1, The Infantry Commander's Guide to Urban Combat.** In the final draft stage of development. This manual will combine the information contained in both ST 90-10, The Infantry

Commander's Guide for Military Operations on Urbanized Terrain (MOUT), and TC 90-999A, Training for Urban Combat. It will be a battalion and below supplement to FM 90-10, Military Operations on Urbanized Terrain (MOUT) and will be published by the end of 1981.

• **ST 7-7-1, The Mechanized Infantry Platoon and Squad (IFV).** Has been published and distributed to selected field units and service schools.

• **FM 7-999A, Tactical Employment of Mortars.** In the initial draft stage of development and will be published by the end of 1981.

The Ranger Department has three texts and one TV tape in production:

• **ST 21-75-1, The Ranger Course Pamphlet.** Describes the overall concept of Ranger training and lists, in detail, the requirements for attendance at the Ranger Course. Available through Army-Wide Training Support (AWTS) channels.

• **ST 21-75-2, The Ranger Handbook.** A revision of the present Ranger handbook. Also available through AWTS channels.

• **ST 21-75-3, Dismounted Patrolling.** Designed to supplement Chapter 5, FM 7-8. Provides a comprehensive guide to the principles and techniques of various patrolling operations and related special operations. Will be published in early 1981.

• **Ranger Training (TV tape).** A revision of the present tape of the same title. Complements the Ranger course pamphlet, and provides guidance for prospective Ranger students to prepare for Ranger school.

FORT BENNING PRESENTLY HOSTS the Army's only Officer Candidate School (OCS). In an attempt to complete its history, the school is looking for graduation programs or classbooks of certain classes which are missing from the historical collection.

The documents provided will be displayed in the Infantry OCS Hall of Fame (Wigle Hall) at Fort Benning and will be used to research former graduates.

The school is asking past graduates or their families who may have the desired

items to donate or lend them for inclusion in the collection.

The numbering system for classes varied over the years. Listed below are the designations for classes for which documents are missing:

1	182	2 - 1951	41 -	1967
2	183	4	43	"
3	187	11	45	"
4	192	11A	49	"
5	194	12	50	"
6	204	12A	51	"
7	205	13A	53	"
8	207	14A	55	"
9	208A	17	59	"
10	210	18	61	"
11	213	19	62	"
12	214	20	64	"
13	217	22	66	"
14	219	23	67	"
15	221	24	70	"
16	222	26	1	1968
18	223	33	2	"
20	224	34	4	"
21	237	35	5	"
23	242	40	7	"
24	244	43	501	"
25	247	44	507	"
27	248	45	508	"
28	261	47	512	"
29	262	48	513	"
30	265	49	521	"
31	270	52	522	"
32	273	53	525	"
33	275	57	9	1969
34	279	58	11	"
36	283	59	501	"
37	284	61	18	"
39	290	67	19	"
44	297	69	23	"
46	298	75	24	"
48	302	71	25	"
49	308	3 - 1954	39	"
51	309	7	33	"
52	312A	11	37	"
66	326	7 - 1955	38	"
78	336	3 - 1956	39	"
79	337	5	3	1970
84	354	8	4	"
85	355	9	7	"
87	367	3 - 1957	9	"
92	368	5	10	"
97	369	2 - 1958	12	"
98	370	3	13	"
100	373	4	14	"
101	382	3 - 1959	15	"
104	390	4 - 1960	16	"
106	393	4 - 1961	17	"
109	401	3 - 1962	18	"
111	407	8 - 1964	19	"
112	438	7 - 1965	20	"
120	442	10	21	"
122	456	2 - 1966	22	"
125	470	6	23	"
126	484	7 -	16 -	1971
131	489	8	18	"
132	530	9	19	"
142	533	10	2 -	1972
155	536	11	3	"
160	540	16	5	"
164	544	2	1967	6
168	3 - 1947	10	1	1973
169	4	15	5	"
176	6	29	6	"
178	7	31	"	"
179	8	36	"	"

IN OUR JULY-AUGUST 1980 issue, pages 39-40, we published an article en-

titled "Battle Run." It was written by Captain John R. Scales. As a result of that article, the Infantry School's Directorate of Training Developments has furnished us the following information:

• ARTEP 71-2, Mech Infantry/Tank Task Force, has been under complete revision since early 1979. USAARMC and USAIS are jointly responsible for the development of the revised ARTEP 71-2.

• It is planned that the revised ARTEP 71-2 will contain specific tasks and missions involving mounted fighting for mechanized infantry. Squad and platoon missions will contain separate sets of conditions and standards for the three possible modes of fighting: mounted, dismounted with carrier, and dismounted without carrier.

• Revised ARTEP 71-2 will also contain separate training and evaluation outlines (T&EOs) for the mechanized infantry carrier team (mounted) and maneuver team (dismounted). Each team will have a separate T&EO for attack, defend, and firing proficiency missions.

• The revised ARTEP 71-2 is scheduled to be distributed to the field by October 1981.

The USAIS point of contact for ARTEP 71-2 is Collective Training Branch, DTD, USAIS, ATTN: Captain Scruton or Major Huntington. The telephone number of the point of contact is AUTOVON 835-4848/4019.

THE FOLLOWING NEWS ITEMS were sent to us by the U.S. Army Infantry Board:

• **Low Cost Night Vision Goggles (LCNVG).** Two years ago, the Board conducted a concept evaluation program test of two candidate low cost night vision goggles. (INFANTRY, November-December 1978, pages 7-8.) That test proved the feasibility and military utility of the LCNVG concept, and was used as the basis for a letter of agreement for further development.

Just recently, the Board tested two LCNVG candidate goggles in an Operational Test I, using the standard AN/PVS-5 goggles as the control item. Both of the candidate versions use a head-mounted image intensifier that provides a night vision capability for driv-

ing, surveillance, patrolling, and other tasks. Although the devices have only one image intensifier tube and objective lens, both allow viewing with both eyes.



Test soldier wearing HOT LCNVG candidate and CVC helmet.

The candidate goggles each weighs about 1.5 pounds and each can be focused for use from 10 inches to infinity. Both versions, like the AN/PVS-5, have built-in infrared (IR) light sources that can be used for illumination purposes while the wearer performs close-in tasks. The standard battery, BA1567/U, is used to power all three of the goggles.

The first candidate LCNVG, the Holographic One Tube (HOT), has a

see-through design and affords sufficient face relief for a wearer to use eyeglasses.

The other candidate, the monocular (cyclops) design, has a pop-out feature for quick removal in emergencies and also has sufficient face relief for the user to wear glasses.

The operational test was conducted between March and May 1980 at night under the prevailing weather and ambient light conditions at Fort Benning. The weather varied between clear skies and fair conditions to overcast skies and frequent moderate-to-severe thunderstorms. Temperatures varied from 33 degrees to 65 degrees Fahrenheit, and testing was conducted during all moon phases.

The test groups consisted of a mechanized infantry platoon, an infantry squad, an 81mm mortar section, a battalion medical evacuation team, track and wheel vehicle mechanics and drivers, and electrical device repairers.

The night vision capabilities of the two candidate LCNVGs were compared with those offered by the control item as the soldiers used each alternately while they performed individual and unit tasks. The capabilities of the two candidate systems were measured by comparing the performances of individual soldiers when they used the candidate goggles with their performances when they used the control goggles.

The Board has forwarded its test report to the Infantry School. The test manager for this project was Major Daniel D. Turner, Chief, Small Arms Test Division.

• **Armored Vehicle Mounting System (AVMS) for the 60mm mortar.** The Infantry Board conducted a concept evaluation program test of an armored vehicle mounting system (AVMS) for the 60mm mortar during March and April 1980. The purpose of the test was to assess the operational performance of a 60mm mortar mounted on a tank. When mounted, the mortar was used to engage known or suspected locations with high explosive or illumination rounds.

The Board's test consisted of nontactical live fire exercises. Three tanks, each equipped with a turret-mounted 60mm mortar, were used. Firing techniques, ammunition handling, firing effective-



ness of the mortar, training and mounting, and comparison fire between the 60mm gun and the main guns on the tanks were assessed.

The test results will be used by the Infantry School and the Armor Center to make decisions concerning the further development of a tank-mounted mortar. Captain John W. Kelley was the Board's test manager for this project.

TO IMPROVE ITS RIFLE MARKSMANSHIP PROGRAM, the Army has developed a training device known as the Weaponeer. (INFANTRY, January-February 1978, pages 7-8.) Thus far, the Weaponeer has been fielded at the TRADOC posts that train initial entry soldiers in basic rifle marksmanship (BRM) skills.

These posts have been impressed with the value of the device as a remedial training aid. Soldiers who have had trouble zeroing their rifles or firing them properly during the field firing phase of their BRM training have used the Weaponeer to help solve their problems.

Weaponeer is an outdoor marksmanship trainer that consists of a modified M16A1 rifle mounted on a platform that displays scaled E-type silhouette targets at ranges of 25, 100, and 250 meters. The targets are operated from a console that can be programmed by an operator or operated manually. The operator can also vary the desired target exposure times. Once the firer has completed a scenario, the console can provide him with an instant printout of his shot group.

The console also has a visual display



Test soldier wearing cyclops LCNVG candidate with standard steel helmet.

screen that tracks and displays the firer's point of aim for up to four seconds before the Weaponeer is fired. And when he pulls the trigger, the firer receives the same recoil and sound he would experience under live fire conditions. The rifle is connected to a recoil rod that can be set for the desired recoil shock, and the headphones the firer wears during a scenario provide the realistic sound simulation.

The visual display screen helps an instructor to determine if the firer is properly using the four fundamentals of rifle marksmanship — steady position, correct aiming, proper breath control, and trigger squeeze.

The Weaponeer has numerous advantages. It not only provides instant feedback to the firer, it offers almost unlimited target practice regardless of range availability or weather conditions, less wear and tear on a unit's rifles, and reduced expenditures of ammunition. The device can also be set for automatic firing, and the platform can be easily adjusted to fit either the prone firing configuration or the foxhole supported configuration. It requires little space (6 feet by 17 feet) and is quite reliable, if it is properly maintained.

The Army is now contracting for a device called the Moving Target Marksmanship Trainer (Weaponeer II), which will be used to teach the fundamentals of firing at moving targets. It has all of the capabilities of the present Weaponeer, and more. Weaponeer II will have F-type as well as E-type silhouette targets, and its targets will be programmed to move either to the left or to the right at varying speeds.

The point of contact for the Weaponeer at the Infantry School is Lieutenant William G. Phelps, Directorate of Training Developments, who can be reached by telephone at AUTOVON 835-7257/1416.

SINCE JULY 1980, the Army's Combat Developments Experimentation Command (CDEC) at Fort Ord has been assisting the United States Marines in a Department of Defense test called Advanced Antiarmor Vehicle Evaluation, or ARMVAL for short.

Using realistic tactical scenarios,



ARMVAL consists of a number of two-sided, force-on-force experiments that are designed to evaluate the contribution of lightweight combat vehicles (LCVs) to combat units. A question being asked during the evaluation is: Can LCVs survive as members of combined arms teams on the battlefield?

The Army's Tank and Automotive Research and Development Command (TARADCOM) has modified ten M551 Sheridans to give them greater speed, mobility, and agility. The LCV version weighs only 13 tons, about half the

weight of a normal Sheridan, and has an improved suspension system, a high horsepower-to-ton ratio, and an advanced fire control system. It can go from a standing start to 30 miles per hour in 7.5 seconds, and can reach speeds up to 60 miles per hour.

For the ARMVAL test, the LCV does not have a main gun. Instead, each player fires a low-power, eye-safe laser, with computer simulations that represent a high-velocity 75mm cannon.

The field execution phase is scheduled to end in mid-December 1980.

THE ARMY IS NOW actively engaged in improving the TOW warhead. The Army wants to develop field improvements that will provide greater lethality and harden the system against obscurants and electro-optical counter-

measures.

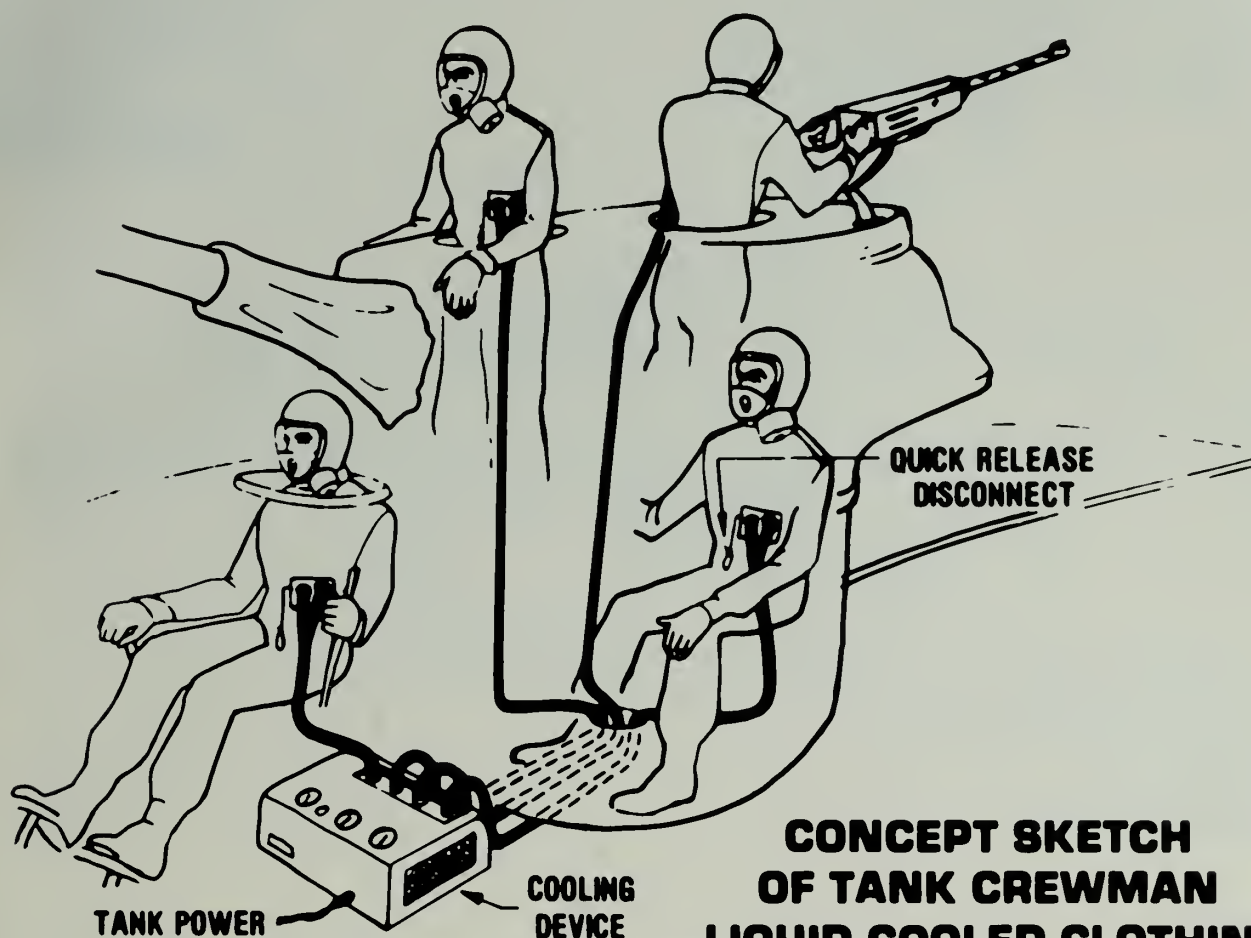
It is hoped that the program will be completed by early 1983. In the meantime, test programs continue as planned to determine whether the improved designs will meet the Army's requirements.

AT THE ARMY'S Natick Research and Development Command, scientists are investigating ways and means of combating the excessive heat and humidity that often build up in closed tanks and other closed combat vehicles and cause fatigue and heat casualties. Air conditioning the entire vehicle has proved impractical because of space and power constraints.

Now the scientists at Natick are looking at microclimate cooling of the sol-

dier's clothing system, which allows it to be maintained in a thermal balance regardless of the environmental extremes outside of the clothing ensemble.

The microclimate cooling method uses liquid as a cooling agent and overcomes many of the problems associated with air cooling. Employing the basic techniques that have been used to cool astronauts, the liquid cooled garments (LCG) are compatible with all existing combat clothing and equipment, while the liquid



CONCEPT SKETCH OF TANK CREWMAN LIQUID COOLED CLOTHING WITH VENTILATED FACEPIECE



microclimate control unit meets the space and power constraints of combat vehicles.

The LCG is a simple liquid transport garment that provides conductive cooling to the torso, neck, and head. In the tests that have been held thus far, cooling those particular areas has proved to be an effective method of reducing heat stress.

The most significant feature of this clothing system is the use of a new lightweight material that has liquid-flow channels built directly into its entire surface. This material is not bulky, is highly flexible, and conforms easily to the body. A crewman can wear it comfortably with his clothing, helmet, and equipment. Because the liquid-flow channels are close to the surface of the body, high heat transfer and efficient

cooling can be achieved.

To operate his LCG, a crewman must use a portable heat exchanger outside his vehicle or a central console unit inside his vehicle. He puts on his LCG under his combat clothing, connects it to the cooling unit, and starts the fluid pump. The cool fluid is then circulated through the LCG channels.

Further development and tests are planned for this year.



FORUM & FEATURES



WINTER TRAINING IN ALASKA

MAJOR DAVID R. KIERNAN

Ever since 1867 when the United States bought Alaska from Russia, we have had armed forces serving on this, our last frontier. One-fifth the size of the entire United States, Alaska offers an infantry leader training opportunities that are as vast as its wilderness. Nowhere else is the terrain more available, more unrestricted, or more challenging.

THE SOLDIER VERSUS MOTHER NATURE

The training restrictions for the infantryman in Alaska are determined for the most part by the weather. All of the basic functions that support his ability to move, shoot, and communicate are affected by the extremes of both temperature and daylight. The winter generally comes during October — bringing with it not only cold but darkness — and it does not leave until May.

The cold is dry and subtle to the *cheechako*, or newcomer, who may expect the damp cold and wind chill he has

experienced in Europe, Korea, or the lower 48 states. Early snow can be brushed from the steps in front of the orderly room with a broom, because it lacks the moisture and the weight of typical snow in the temperate zone. These early snowfalls do accumulate though, and soon a 30-inch white blanket covers the ground.

Along with the cold and the snow, the long hours of darkness during the winter months set the stage for an exciting training experience, and the darkness itself has a tremendous effect on training.

The major U.S. Army force in Alaska is the 172d Infantry Brigade, headquartered at Fort Richardson, near Anchorage. The Brigade has three infantry battalions — two at Fort Richardson and one at Fort Wainwright, which is 400 miles to the north adjacent to the town of Fairbanks. Each of these battalions has a designated airborne company and some reconnaissance elements that frequently operate on snowmobiles.

These units are light infantry for the most part. (Mechanized vehicles are tre-

mendously hampered by maintenance problems ranging from the viscosity of fluids to cracked periscopes). They are



New arrivals are quickly introduced to skis and snowshoes.



Man and helicopter are inseparable for arctic tactical operations.

supplemented by field artillery and an aviation organization that is vital to every operation.

Because there are no sophisticated road networks, and because the snow hinders passage on the existing system, the infantryman and the Army aviator are forged in a union of mutual dependence for virtually every mission. Without the helicopter the soldier must depend on skis, snowshoes, or the ahkio, which is a sled the squad members use to transport their rucksacks, stoves, and equipment while moving themselves in dogsled fashion. The squad literally rotates its members through the harness at timed intervals, and all pull the load.

The soldier is prepared for his tour in Alaska through fledgling or newcomer training. The Snowhawk Orientation, a five-day program, is given to all incoming officers and soldiers, regardless of MOS or job, and is designed to acclimate

the soldier to an arctic environment. The program of instruction includes survival (edible and nonedible vegetation), rappelling, constructing hasty shelters, and using skis, snowshoes, and ahkios. The soldier is also taught to respect the dangers inherent in arctic living.

The clothing that is issued is practical, but the individual soldier and every member of his chain of command must constantly check its serviceability.

And little things that are taken for granted during field exercises at other posts take on a new dimension in Alaska. It is impossible, for example, to dig a latrine during a winter operation. And food is far more important during cold weather operations.

Many myths are also exploded. Taking alcohol in increasing amounts, for example, will not keep the body warm, and one large coat or parka does not insulate the body as well as several layers

of shirts and sweaters.

Usually, joint services exercises such as JACK FROST take place in January or February of each year. For exercises on this scale, the Readiness Command at MacDill Air Force Base in Florida orchestrates an operation that can extend from Fort Wainwright to Fort Greeley, 90 miles to the south.

TRAINING

From October through March, too, battalion combat teams (BCTs) from various divisions in the lower 48 states travel to Alaska for two weeks of intensive field training. As many as five BCT units pass through Fort Wainwright during this four-month period. They are equipped, briefed, and on skis in the field within 48 hours of their arrival, and they return home with a better appreciation for

their Alaskan counterparts and a respect for the Alaskan wilderness.

During the spring and summer, glacier training, ARTEP preparation, and individual skills make up most of the training for the infantrymen as they hone their skills for the approaching winter.

For the infantryman in Alaska, the challenges are many. He is tested first as an individual, and then as a leader; he must survive and he must continually check to make sure that those he leads also survive and are fit to fight. He and his men must endure the cold and darkness by planning carefully and executing each mission cautiously. When the mission is accomplished, though, the infantryman stands confident, knowing that only a few have faced the same challenge

and succeeded — that as a frontiersman, he may be one of the last.



MAJOR DAVID R. KIERNAN is presently assigned to the 1st Battalion, 29th Infantry, at Fort Benning. Before this assignment, he was the Public Affairs Officer at Fort Wainwright, Alaska. He has served in numerous command and staff assignments in Europe, Vietnam, and the United States. A 1966 graduate of the Virginia Military Institute, he completed the Special Warfare School in 1969 and the Infantry Officer Advanced Course in 1972. He is also a graduate of the Defense Information School.

Psychiatric Casualties



MAJOR BRIAN H. CHERMOL

When an infantry small unit leader thinks of possible battlefield casualties among his soldiers, he usually thinks of physical injuries and deaths. Statistics demonstrate, though, that in future, large-scale conflicts, psychiatric casualties may in fact exceed physical ones, particularly in a unit in a forward combat area or in a nuclear environment.

In the high-intensity warfare of World War II, there were many such casualties. By comparison, in Vietnam — because of the relatively low-intensity combat, the time-limited tours of duty, and the excellent support systems — there were far fewer. Still, there were some, and a few case histories from that era will serve as examples of the various types of psychiatric casualties that we can expect on a larger scale in more intense conflicts.

In one instance, an infantry company had been in nearly continuous contact

with North Vietnamese Army (NVA) forces for 30 days. Its casualty rate had exceeded 50 percent. Enemy fire had interrupted the delivery of rations, and on many days the soldiers had had little sleep. The other two maneuver companies in the battalion were in even worse shape — they had been surrounded and were suffering an even larger number of casualties. Despite its poor condition, the company was ordered to break through the NVA lines to relieve the pressure on the other companies.

The company soon came under heavy NVA automatic weapons fire, however, and its point man was wounded. The company deployed and its soldiers began returning the NVA fire.

After about 30 minutes, a 20-year-old soldier suddenly stood up and began running back and forth parallel to the NVA lines. Yelling and cursing, he seemed totally unaware of the dangerous position

in which he had placed himself. His platoon sergeant finally wrestled the soldier to the ground, and he then appeared to lapse into a profound depression. The soldier stared blankly, would not communicate with others, and had to be led about.

Eventually the soldier was evacuated to a support hospital where he received hot food, a bath, rest, and supportive counselling. Within a few days he was returned to his unit, where he completed a normal tour of duty with no apparent residual effects.

This case represents one of the most typical responses to combat stress. It also demonstrates that such a response can be treated in a short period of time and that, if he receives proper treatment, a soldier can remain and be an effective member of his unit. It is important to the soldier for the medical staff with which he comes in contact to hold to the basic assumption

that his hospitalization will be only temporary and that he will be returned to his unit at the earliest possible time. It is also important for his peers to be given the same impression.

As another example, during a firefight with enemy forces, a 26-year-old soldier was shot in the thigh. The bullet passed through the flesh without fracturing the bone or severing the artery. The medical corpsman attached to the unit reported that the wound was not life-threatening but that the soldier would have to be evacuated since he could no longer walk. The corpsman — who was experienced in treating such wounds — stopped the bleeding and treated the soldier for shock.

Despite this treatment, the soldier died before the medical helicopter arrived. His body was returned to the battalion fire base where the battalion surgeon concurred with the opinion of the corpsman — all indications were that the man had not suffered a fatal wound.

There were, however, other factors in the soldier's personality and recent history that may have made him more vulnerable to physical trauma. He had been a loner and had maintained an emotional distance between himself and the other platoon members. In addition, a few days earlier, he had learned that his wife wanted a divorce. The soldier had become despondent. While he was being treated by the corpsman for his leg wound, he was heard to say that he wished he would die, that he had nothing more to live for. All of these factors, plus the stress of combat, may have worked together to decrease his drive for survival.

COMBAT STRESS

This case demonstrates the effect psychological factors can have on physical injuries. The stress of combat, an asocial personality, and an external loss can all conspire to reduce a soldier's motivation to live. While little can be done to modify these factors, effective leadership can often help such a soldier to get along with the other members of his unit and to deal with his fears and personal problems. The above case demon-

strates that leaders must be responsive to the emotional as well as the physical needs of their subordinates.

In the final case history, two companies in the same battalion were moving along parallel routes. Both units had been under nearly constant fire for several days as they pursued retreating enemy units. The commander of one of the companies was a reserve officer who had been on active duty for only a few weeks. He was a friendly, well-motivated officer, and he was popular with his men; in fact, he felt close to each of them. This was his first command and his introduction to combat. During the past few days, several soldiers in the unit had been killed or wounded, two by misguided air support.

When his unit was ordered to move to a different location to support another unit that was in heavy contact with an enemy force, the commander replied that his soldiers were incapable of such a mission and requested that his unit be rotated back to the fire base. An hour later, one of his platoon leaders came on the radio and reported that the commander appeared to be dazed. When the other company closed in and its commander had assumed control of both units, the other commander was relieved. He had a vacant stare and would say nothing, only mumbling to himself occasionally.

After he was evacuated, the officer was provided with rest, food, a bath, and counselling at the medical support hospital. Soon he was transferred to a brigade staff position where he completed his tour of duty.

In this case, a sensitive, warm officer was placed in a high stress position without being adequately prepared. He had been previously assigned to a reserve unit in which his subordinates were friends and neighbors, and he tried to duplicate those relationships with the soldiers in his new unit. As a result, he tended to react to casualties on a personal, emotional level that interfered with his effectiveness as a commander.

While the establishment of personal relationships in combat units should not be discouraged, perhaps they should be restricted to peers and immediate subordinates. And in future conflicts consideration should also be given either to per-

mitting an officer to command a unit outside the theater of operations before he assumes a combat command or to permitting a newly assigned officer to serve in a staff position before he assumes combat command.

TYPICAL CASES

These three examples are typical of the casualties that small unit leaders will see in future conflicts. It is important that those leaders be able to recognize soldiers who are potential psychiatric casualties so that they can take steps to prevent such casualties in their units. At the same time, when a subordinate observes in a superior behavior that suggests instability, inhibiting anxiety, depression, or other emotional problems, he should consider discussing the individual's behavior in confidence with either the unit commander or with the battalion surgeon.

Most psychiatric casualties occur in units that have been in contact with an enemy force for prolonged periods of time. Sleep loss, a lack of adequate rations, a lack of training and experience, a lack of confidence in leaders, heavy casualties, intraunit disagreements, and unresolved family problems — all of these can increase a unit's potential for psychiatric casualties.

Soldiers who are most vulnerable usually fall in the following categories:

- The young, overindulged soldier who has never left home before and is overly dependent on his parents and family.
- The soldier who has financial, marital, or other family problems at home that seem unsolvable.
- The soldier who has used alcohol or drugs to sustain his performance for long periods of time.
- The loner who does not participate in unit activities and rarely shares information about himself with others.
- The chronically anxious soldier who may cry or stutter or have a nervous tic, or who cannot seem to relax.
- The pessimistic soldier who feels that he is foredoomed to become a casualty.
- The soldier who feels ill prepared for his assignment because his training

and experience were not in a combat arm.

- The soldier who is overly dependent upon his friends in the unit, who constantly discusses his problems and feelings with other unit members, and who seems to require constant praise or encouragement to perform well.

There are certain specific signs or symptoms a commander can look for:

- Depression manifested by crying, vague physical complaints, severe pessimism, or loss of appetite.

- Anxiety manifested by a feeling of apprehension, body tremors, or an inability to sleep.

- A prepsychotic condition manifested by social withdrawal, bizarre behavior, lack of emotion, confused or irrational thinking, or a regression to a younger age in behavior, speech or thinking.

In a peacetime Army, stress reactions usually take longer to occur because friends and family are usually accessible, there is leisure time available, and the general level of stress is lower. In combat, however, a relatively normal soldier can become a psychiatric casualty within days or weeks.

When a psychiatric casualty occurs in

a unit, the commander is often caught unaware. But friends of the soldier and his immediate supervisor may have known for some time that the soldier was becoming less effective as a unit member, less responsive to his fellow unit members, or less emotionally stable. Often, prompt action on the part of his NCO or friends could have prevented the soldier from becoming a psychiatric casualty.

As in the cases cited, most psychiatric casualties respond well when they are removed from their units and given a few

days to sleep, eat warm nourishing food, clean their bodies and clothing, and discuss their feelings and emotions with trained mental health personnel.

Identifying and preventing psychiatric casualties is both a command and a medical responsibility. The appropriate exercise of leadership at the unit level can do much to lessen the possibility that a soldier will succumb to physical and emotional stress, and the practice of combat psychiatry and psychology at the medical support level can do much to return the patient quickly to his combat role.



MAJOR BRIAN H. CHERMOL is a 1963 graduate of the infantry officer candidate school and has served with the 82d Airborne Division and other units in the United States and with various units in Vietnam, where he served two tours. His combat experience also includes service in the Dominican Republic. He holds a Doctor of Philosophy degree from the University of South Carolina, and since 1972 has served on active duty as a clinical psychologist.

Antitank Grenades



CAPTAIN LARRY A. ALTERSITZ

The weapons that infantrymen now have to use against tanks are the TOW, the Dragon, the LAW, the M79/203 dual-purpose 40mm round, and the M21 antitank mine. And a few units still have 106mm recoilless rifles. But our infantrymen do not have an antitank grenade, and this is a serious gap in their antiarmor arsenal of weapons.

For close-range combat, such as in built-up areas, none of the above listed

weapons is very effective. The TOW, Dragon, and LAW all have distinctive backblast signatures, and the missiles have long minimum ranges. With the LAW and the 40mm rounds, range estimation can be a problem, and the rounds will not penetrate heavy armor. As for the mines, training in emplacing them, at least in the Reserve Components, is less than adequate. For these reasons, I believe that the infantryman needs a

silent-launch, dual-purpose, shaped charge antiarmor weapon.

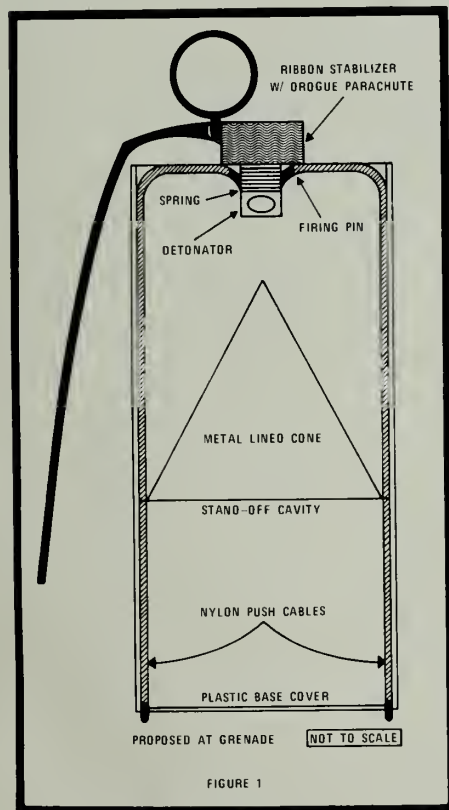
I propose that we develop a grenade that looks like a standard smoke grenade, so that we can put in one package a powerful shaped charge with the proper stand-off distance (Figure 1). To solve the problem of stabilization (making sure the grenade lands with the shaped charge pointing down), a system similar to the one used in the submunition for the

dual-purpose improved conventional munition could be used. Each submunition is ribbon-stabilized to descend properly over the target area.

In my proposed grenade, when it was thrown, the handle would be released and a ribbon stabilizer with a small drogue parachute would be pushed out of the top of the grenade by a spring. This stabilizer would also insure that the safety pins around the base of the grenade were removed either by the spring release or by the drogue parachute. When the grenade hit the target, the base would collapse and drive home the firing pin to detonate the shaped charge.

The main targets for the grenades would be the top decks and turrets of armored fighting vehicles. If it were built with a serrated body, it could also be used with deadly effect as an anti-personnel weapon, particularly in built-up areas.

The grenade could also be used as a mine. Armed properly and placed upside-down in a small hole in a street or trail, the grenade could do considerable damage to a vehicle that passed over it. It could also be used as a cratering charge if it were set down on its base in a hole and then detonated by a soldier who dropped the necessary weight on it.



The grenades could be set anywhere vehicles might approach. If they were armed and suspended from tree limbs over a road or trail, for example, the movement of a vehicle could cut the supporting strings and bring about an explosion a second or so later. Ambushes, where a series of grenades would be tripped, could force an enemy either to move slowly or to expose his axis of advance early. The grenades could also be used to trigger tree falls or to tumble walls onto a street. They could be detonated by rifle fire, a claymore mine, or another explosion — anything that would move the firing pin with enough force to start the explosive train.

For the infantryman, the best weapon to use against an armored vehicle is a shaped charge with secondary fragmentation effects. The TOW, Dragon, 106mm recoilless rifle, LAW, and dual-purpose 40mm rounds all use the shaped charge principle, but with varying secondary effects. I believe the principle should be carried one step further — to the hand grenade — to give the man on the ground an extra edge against armored forces.

EDITOR'S NOTE: The Weapons, Gunnery and Maintenance Department of the Infantry School has the following comments on this article:

Although this department does not have the expertise to thoroughly evaluate the design of the proposed grenade, it probably would not perform as desired. The smoke grenade canister configuration does not lend itself to being thrown overhand. Also, the weight distribution within the grenade would probably cause it to tumble in flight, thus making it less likely that it would strike the intended target in the attitude needed to make the shaped charge fully effective.

Grenades are area weapons. To hit a point target, such as a stationary tank, it would be necessary to throw the grenade from extremely close range. This could very well bring the thrower within range of other hostile weapons as well as into the blast area of the grenade itself. The most effective method of employing this grenade appears to be to drop it from some height, out of an upper floor window, for example, onto the upper sur-

faces of an armored vehicle.

Using the proposed HEAT grenade as part of a hasty protective minefield is not recommended. Standard, highly effective, antiarmor mines are available for this purpose. In addition, retrieving any undetonated grenades being used in this role could be extremely dangerous.

The proposed antiarmor grenade's effectiveness as a cratering charge is questionable. The small amount of explosive involved would create only a small crater. In addition, the means of detonating the mine as described could be lethal to the soldier who dropped the required weight on it.

The concept of the HEAT hand grenade is not new. It does have various uses and offers the infantryman a last-ditch capability against armor. The Army is now studying such a grenade, the AZ-58-K-100, which resembles the Warsaw Pact's RKG-3M and RKG-3T grenades. However, the effectiveness of the HEAT hand grenade relies a great deal on the dedication of the user. It is preferred that we consider antiarmor weapons that give the soldier a greater chance of survival before we adopt an antiarmor grenade.



CAPTAIN LARRY A. ALTERSITZ, FSO with the 1st Battalion, 112th Field Artillery, 50th Armored Division, New Jersey Army National Guard, was commissioned from the ROTC program at Northeastern University in 1969 and has served in Vietnam, with MASSTER, and with the 2d Armored Division. He has completed both the airborne and Ranger courses and is a graduate of the Field Artillery Officer Basic Course. Before his present assignment, he served as the S1 of his battalion.

SOVIET TACTICS FOR OVERCOMING NATO ANTITANK DEFENSES

part 2

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C.N. DONNELLY

TACTICAL PRINCIPLES

The Soviet officer is currently taught to approach the problem in the light of the following considerations.

As the attack progresses there must be continuous and effective fire on strongpoints to ensure their suppression first by air and artillery (or nuclear weapons); then by the attackers' own heavy weapons (tanks and ATGMs); and finally by the attackers' small arms and machineguns. The artillery and mortar fire must continue until the very last moment.

The tanks and BMPs must exploit breaks in the defense *very quickly*, taking advantage of unit boundaries or gaps between defenders, and at the first possible opportunity they must rush on into the depths of the defense. They are *not* to tarry on the defense to fight it out or mop up.

Paths must be cleared in obstacles and minefields without any delay. This is as important in the depths of the position, once the front line has been breached, as it is in front of the forward trenches.

The direction of the main thrust must be chosen very

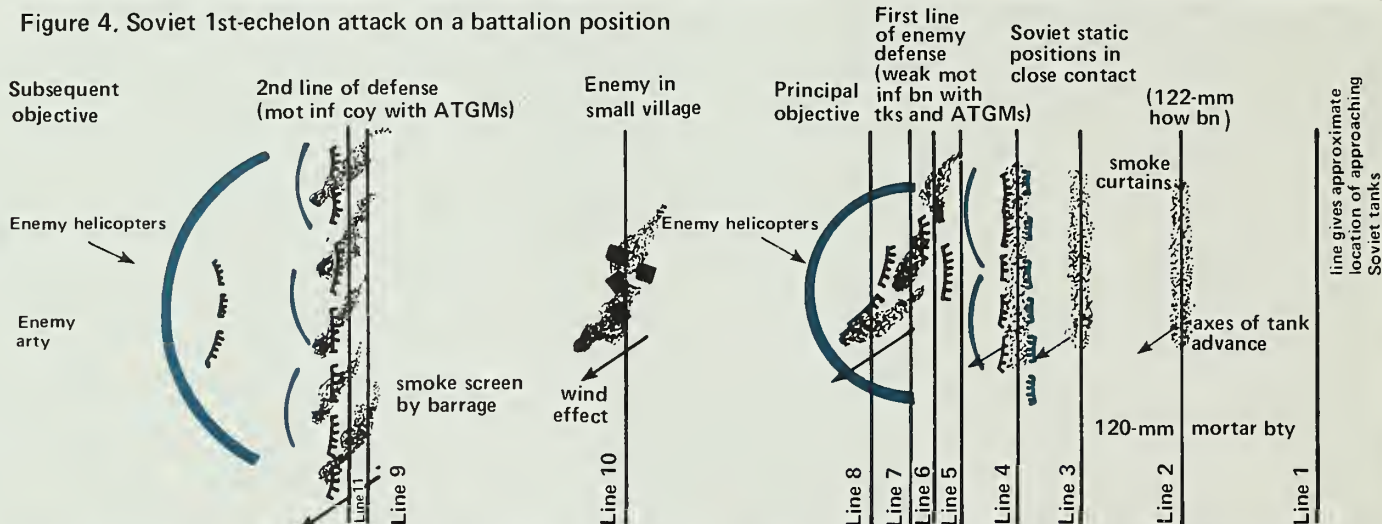
carefully indeed, especially in conventional conditions. For this, a detailed calculation of the densities and ranges of antitank weapons across the entire frontage must be made so as to be sure of attacking the real weak spot in the defense across its entire depth, and not to be trapped in an ambush by a false "weak" link.

The Soviet commander must try and deploy his troops so as to give them maximum ground cover. In practice, however, the Soviet officer will often be forced to sacrifice choice of ground (and therefore lives) in order to gain time, since maintaining the speed of the advance is his most pressing need. The most typical "skillful use of ground" normally held up as a model in reported exercises has involved using a distinct feature such as a defile in otherwise featureless terrain in order to execute an outflanking maneuver and *avoid* the main defense.

Whenever cover is not available, the currently accepted drill is to use large quantities of smoke, both to screen the Soviet attackers and to blind the NATO defenders.

The very latest discussions exhort the commander to make maximum use of conditions of limited visibility

Figure 4. Soviet 1st-echelon attack on a battalion position



Situation: Soviet 1st-echelon forces are holding a static position in front of and in close contact with a weakened enemy battalion position prepared in depth.

Mission: A reinforced tank battalion battle group of the 2nd echelon is given the task of making a very rapid advance by frontal attack through the whole

depth of the enemy position. It is given smoke-screening materials and continuous artillery support. As the tanks approach the indicated lines, they are given smoke cover by the following means at the times detailed (H=time of arrival at front edge of enemy defense). Note that smoke at line 9 is laid well forward of line 10.

LINE	TIME (MIN)	DURATION AND DIMENSIONS	MEANS AND OBJECTIVE
1	H-24 to H-18	6 min. 1.5 km long, up to 40m high	2 tanks emitting exhaust smoke while moving slowly across path of advancing bn to cover deployment from march
2	H-18 to H-14	4 min. 1.5 km long, up to 40m high	ditto
3	H-14 to H-9	5 min 1.5 km long, up to 400m high	2 TMS-65s emitting dense screen while moving slowly across path of advance to cover final deployment to attack
4	H-9 to H-3	6 min 2 km long	240 DM-11 smoke pots ignited in forward positions of own static troops to cover assault. Smoke clears and all available weapons open fire on enemy position
5	H-2 to H+1	3 min 500-m box	120 mm mortar bty places barrage on enemy anti-tk weapons to blind operators for 1-2 min
6	H-2 to H-1	1 min 500-m box	ditto with 122 mm how bty

N.B. Conventional artillery bombardment continues during and between smoke screens

*smoke materials used by end of first stage (overrunning of forward enemy strongpoints): 110 122 mm smoke shells; 72 120 mm smoke mortar bombs;

LINE	TIME (MIN)	DURATION AND DIMENSIONS	MEANS AND OBJECTIVE
7	H+2 to H+4	2 min 500-m box	ditto with 120mm mortar bty, allowing tanks to pass through positions very quickly
	H+2 to H+4	2 min 500-m box	ditto with 122 mm how bty
End of first stage*			
9	H+1h to H+1h 4 min	4 min 1 km long	2X122mm how btys blinding enemy ATGM operators in second echelon of defense, allowing tanks to approach village and continue advance
10	H+1h 14 min	1 min 400-m box	122mm how bty blinding enemy anti-tk crews in village, allowing tanks to pass and inf plus tk detachment to enter village from flank. Own ATGMs to set up in firing positions
11	H+1h 20min	1 km long	4 Su-7B aircraft lay smoke screen to hinder ATGMs and anti-tk helos threatening advance to 2nd echelon of defense

240 DM-11 smoke pots; 120 kg diesel fuel (in tank exhaust generators); 2 Tons combustible smoke material in TM-65s

(darkness, rain, mist, snow) to shield his maneuvers or attack.

PLANNING

Bearing the above principles in mind, the Soviet officer will draw up his outline plan using the following *aide memoire* (Figure 4).

- Know who your enemy is and what his tactics are.
- Put out lots of good reconnaissance and ensure good communications.
- Assess from the map, and then from personal reconnaissance if time permits, where the enemy will expect you to attack and where he will mass his various weapons.
- Note on the map the lines where you can expect to come under effective enemy fire from different types of weapons. Note also where the enemy might deploy his reserve or counter-attack forces.
- Organize proper coordination with the artillery and mortars, and carefully select and indicate target areas to be engaged by indirect fire on a given code word. Write out the fire plan. Approve any engineer plan (for minefield breaching, etc.).
- Detach some (a platoon or battery) of the available artillery for direct fire tasks and bring any ATGMs or antitank guns well forward.
- Make whatever camouflage and deception plans that are possible in the time remaining. Consider the ground, plan the use of smoke and, if feasible, create brush fires, etc, for cover.
- Give all sub-units specific axes, sectors of fire and, where possible, specific targets.
- Ensure that all sub-units put down heavy fire from all their own weapons during the attack. This is especially important when crossing minefields.

It can be appreciated that a Soviet commander faced with a complex antitank problem at battalion level might be hard-pressed to do justice to such a sensible planning procedure in view of the meager staff resources available to him and the very short time he might expect to have. Consequently, recognizing the importance of speed, Soviet military doctrine has evolved the following procedure. It is the normal Soviet practice, having taught the commander the basic principles of the problem, to teach him several "off the peg" alternatives, which are developed and refined by constant study and practical exercises. This is done in the conviction (based on experience) that a few such alternatives well learned will answer most of the battle situations likely to be met, and that it would not be too difficult for most officers to make minor "tailoring" amendments to accommodate non-standard situations.

This practice of reducing each battlefield problem to a few simple alternatives is probably very realistic, especially in view of the emphasis on speed. There would simply not be time, the Soviets maintain, for a commander to make a completely original plan for every operation on the battlefield. Any advantage that originality might have brought would be frittered away, they say, by loss of surprise and allowing the enemy time to prepare or recover. Speed and surprise and the

resultant shock on the enemy are considered to yield better dividends in the long run than versatility and ingenuity.

EXECUTION

- **Reconnaissance.** A Soviet officer will look for two main things when he conducts his reconnaissance and makes his plan. The first concerns differences in antitank defensive practice between NATO armies. Here, he is taught to examine the disposition of strongpoints within the defended area; the disposition and dispersal of weapons among these strongpoints; the size of gaps between strongpoints; and which weapons cover these gaps and from where; the dispersal area of the antitank reserve and likely routes for its being brought forward; and any artillery firing positions. The second concerns points of antitank defenses which can be expected to differ with each position. In this context, he will examine areas of fire of ATGMs with reference to the ground in front of the position; probable second-line positions for ATGMs and likely access routes; and how the antitank fire system is linked to the mine and obstacle system.

- **Fire planning.** As a general rule, an average NATO battalion defense, a Soviet officer is told, will be able to field about 15 weapons with a range of 3,000 meters, 30-35 with a range of 2,000 meters, and 45-50 with a range of 500 meters. Because the long-range weapons will be deployed in depth, fire, if it is to be really effective, must suppress not only the weapons on the forward edge of the defense but also those up to 3,000 meters back. To maintain this suppression throughout the battle will require careful coordination of all forms of available fire — air, artillery (including mortars), tank and antitank fire, and small arms fire. From the point of their first deployment off the line of march until they are right up to the enemy defensive positions, the Soviet troops should aim to advance under cover of a massed and concentrated artillery and air bombardment from organic and subordinated batteries and attached helicopters. The aim of this fire is to suppress enemy artillery and mortar batteries, nuclear delivery means, reserves and strongpoints. The tanks and APCs add their direct fire when within range.

An attacking motor rifle battalion reinforced with a tank company will normally have an artillery battalion under its command in addition to its own mortars. It may have more weapons attached from division, but it is more likely to be allotted support from divisional weapons. Counter-battery bombardment will normally be provided in these circumstances by divisional or even army weapons — long-range guns or rocket launchers. As a NATO platoon strongpoint is said to cover anything from 3-8 hectares, a Soviet artillery battalion can only expect to engage at most two strongpoints simultaneously.

The mean artillery norms for expenditure of rounds on each hectare (100 meters by 100 meters) of the strongpoint in order to suppress the defense sufficiently for the attack to succeed — i.e., put 25-40 percent of the personnel and antitank weapons out of action — are given in Figure 3. These norms are for ranges of up to 10 kilometers; over

FIGURE 3

	GUNS & HOWITZERS				MORTARS			MBRLs	
	122mm	130mm	152mm	203mm	120mm	160mm	240mm	up to 140mm	over 140mm
EXPENDITURE ON A CAREFULLY PREPARED DEFENSE (NO. OF ROUNDS)	200	200	150	60	200	100	50	320	100
EXPENDITURE ON A HASTY DEFENSE (NO. OF ROUNDS)	150	150	110	45	140	85	45	240	80

that, one-tenth of the norm is added for every extra kilometer. If the Soviet gunners can maintain a rate of fire of three rounds per minute, this means a barrage of 15 minutes if there is one artillery battalion of eight 122mm howitzers to fire on each strongpoint. If a battalion splits its fire, this time must be doubled. Unless a good deal of additional artillery is available for counter-battery fire, the Soviet gunners supporting the attack are going to be vulnerable to NATO counter-battery fire.

Soviet confidence in the statistical validity of these norms serves to explain why the Soviets count on such a high level of artillery support to ensure the high speed of their advance. Unfortunately, the higher the speed and deployment of the main forces, the shorter time available to their accompanying artillery for (a) planning and (b) delivering preparatory bombardment. In a really quick attack, a battery may only have five minutes firing time between battery deployment and the final attack of the tanks and motor rifle troops — too short, even at five rounds per minute, to achieve the norm.

As the attackers approach the NATO position, the artillery must shift its fire to targets in the depth of the position. Unfortunately, antitank fire will be most dense just in front of the position, and so if the artillery bombardment has for some reason been ineffective, or if a minefield blocks the advance, it is at this point that the attack risks running out of steam. NATO mortar or artillery fire delivered on to the attackers at this point — perhaps just as they debus from their APCs — will be devastating, Soviet tacticians warn. Fire from the attackers will increase the efficiency of the suppressive fire and will maintain its effect after the artillery barrage lifts. Soviet tanks carry a high proportion of HE rounds for the suppressive fire task. Soviet artillery firing direct, or ATGMs, can continue to shoot for some time after indirect fire has lifted.

The tanks will invariably lead the assault by day, the BMPs or BTRs following quite close behind. When the infantry dismount, they should aim to stay within 200 meters of the tanks so that their small arms fire is effective at suppressing the short-range antitank weapons that pose the greatest threat to the tank as it mounts the objective. The BMPs will follow behind, when possible adding to the suppressive fire. In rough country and scrub land, it has lately been the practice to put three or four infantrymen on each tank to deal with the close-range threat. This is now being increasingly postulated as a good idea in normal terrain, especially in conditions of limited visibility.

It is the task of the commander and the artillery OP

officer to watch for enemy weapons not bracketed by the bombardment, and to bring down effective fire on them using both a platoon of the supporting artillery, detailed to be ready to switch targets for this purpose, and a group of the attacking tanks and APCs. Any tank or hardened target deployed outside a strongpoint will not be engaged by indirect fire, which is too costly in shells, but by direct fire from attacking tanks or ATGMs. In war, Soviet writers remind us, the troops will move a lot closer up to the shell bursts than they do in peacetime.

When fire is shifted from the forward edge of the position towards the rear and flanks, the difficulty most often encountered is that the density of fire becomes too low, uneven and dispersed, and moves too far from the attackers. This is when the mobile artillery OP must deploy well forward, right behind the attacking troops so as to be sure of doing this job properly. If helicopters are performing this role, the same applies to the air liaison officer.

Major enemy concentrations in the rear, second echelons of defense, or rapid mining activity in the rear will usually be engaged by formation artillery corrected by helicopter spotting. These guns will also take on enemy counter-attacks, artillery batteries, radar and radio transmitters (using ELINT) and HQs.

Any Soviet unit commander can expect to have both point and umbrella air cover, but in the fluid conditions of battle, the umbrella will — the Soviets admit — have many holes, and point defense will be limited. Furthermore, say the Russians, air defense is particularly vulnerable to low-flying aircraft. An attacking antitank helicopter will only be in range of regimental AA weapons for about one minute. During this time, the AA gunners must observe the target (or be told of it and locate it), deploy their weapon, aim and shoot — probably at a helicopter flying at 10 meters altitude 2,000 meters away. Moreover, Soviet sources say that their smaller missiles are not very effective against low-flying aircraft at long range. Consequently, *all* soldiers must be trained to spot aircraft and pass the information on along tried and tested channels. They must then be trained to fire their small arms at the aircraft. Like the Soviet antitank weapons, in the attack the anti-aircraft vehicles move in leaps and bounds, one vehicle remaining in a static firing position whilst another advances to the next chosen firing position. It is the duty of the AA sub-unit commander to identify the area from which air attack is most likely during the assault (e.g., from behind flanking forests or a line of hills) and advise the combined arms commander of the likely flight

paths (of helicopters, etc.) so that he can alert his men. If the main danger is from, say, the right flank, then the AA weapons will be deployed on this flank, somewhat behind the first echelon troops, often in close proximity to the unit HQ.

● **Handling tanks and BMPs in assault.** Deciding on the details of handling the tanks and BMPs during the assault is clearly of crucial importance to success. The Soviet aim will always be to bypass opposition wherever feasible and to push on into the rear as rapidly and with as few losses as possible. Once in the rear, they may advance or, if very considerable forces have survived in the forward echelon, they may turn and try and attack both first and second echelon positions from the flank and rear. In the event of a breach being opened in the enemy position, it is Soviet practice to pour massive effort into exploiting that breach, at the expense of units on other sections of the front which have not broken through. Soviet doctrine exhorts its adherents always to reinforce success — never to reinforce failure. The main threat to the Soviet forces as they pass on into the defended area is from a counter-attack or from reserves moving to block a gap in the defense. The overriding principle here is to preempt the enemy, advancing so fast that he never has time to fall back in order to consolidate on a second line of defense or maneuver his forces to block a threatened axis.

The advancing Soviet tanks will engage targets in the following order of priority: tanks, ATGMs, then SP antitank guns. Small arms fire will engage first ATGMs, then light antitank weapons, then infantry, and mortar and artillery crews.

Because indirect fire is so ineffective in actually destroying dug-in tanks, Soviet tanks in attack will engage any NATO tank observed at very long range with salvo fire. At ranges up to 2,500 meters, a platoon (three or four tanks) will fire in salvo at a single target or group of enemy tanks. Above that distance the whole company (10-13 tanks) will fire in salvo.

As the Soviet forces press on into the defended area, their vehicles will move to positions from which they can cover the more likely approach routes of a counter-attack. Any available and suitable engineer elements the Soviet commander will deploy with his ATGMs to act as an obstacle detachment.

Much greater attention has been paid in the Soviet open press during the past two years to the employment of flamethrowers mounted on tanks in the first wave of the advance. Their devastating effect at close range (50 meters) makes them an excellent weapon for dealing with strongpoints during the last few moments of the advance. Flamethrower tanks are often employed in small groups for mutual protection and improved destructive capacity.

● **Minefield breaching.** For breaching minefields and other obstacles, both in front of and in the depths of the position, the unit commander will have tank ploughs and rollers, bangalore torpedoes or rocket hose charges, large quantities of sticks for prodding, and artillery. Normally, every forward tank platoon has two tanks fitted with ploughs used to make two parallel lanes simultaneously. The remaining tanks of the platoon give covering fire until the ploughing tanks have crossed the minefield, then they cross under cover of the plough tanks' fire. The platoons



following approach to within 200-300 meters of the lane and the lead tanks dashes for the breaches whilst the remaining tanks advance slowly giving covering fire. They then each dash in turn. The BMPs and APCs follow at a steady rate, form up with the tanks beyond the obstacle and continue the advance. Minefields can only really be breached during an offensive under cover of the artillery bombardment.

Rocket-projected hoses are available but Soviet open-press sources seem to place little reliance on their availability. More reliable is the availability of artillery for breaching minefields, although it is technically less effective and would only be attempted when no other means could be employed. During the artillery preparation, a battery of 152mm howitzers may be detailed to create one or two lanes in a minefield. The battery will take up a (preferably direct) fire position within six kilometers of the minefield and be controlled by an OP within 1.5 kilometers of the obstacle. The most effective method is to employ ricochet fire — bouncing the shells off the ground with a delay fuse set to detonate at 3-5 meters (1.5 meters for 122mm shells) above the minefield, thus detonating the mines by blast and splinter. Some 150 152mm rounds should be sufficient to clear a 15-20 meter gap in a minefield 100 meters long in this fashion. Using a high-angle fire and moving the barrage across the minefield requires more ammunition. Wire can be breached in the same way.

• **The direction of the main thrust.** The competent Soviet officer will base his choice of the direction of his main thrust on a careful analysis of the whole width of the defense. He must make not simply a quantitative but also a qualitative assessment of antitank weapons. For example, of two similar platoon strongpoints, the first with five ATGMs, five tanks and 15 light antitank weapons with a density of 15 weapons per kilometer and the second with three SP antitank guns, 10 recoilless guns and 30 light weapons at 25 weapons per kilometer, the former example is considered by the Russians to be the more formidable because the ATGMs and tanks will have a decisive advantage in range over the attacker.

• **Deception.** Deceiving the enemy as to the direction of the main effort is normally associated with formation tactics and operations, but simple deception can be used to good effect by units, particularly if the ground permits covert maneuver, allowing part of the force to hit the enemy in the flank or rear.

In considering how a Soviet officer might see his maneuver options, it is most important to realize that, from his point of view, virtually any track is just as good an axis of advance as a metalled road. Less than 10 percent of the Soviet domestic road network is metalled, and the Soviet officer does most of his training on dirt tracks. (In this context, note that the Russian word *doroga*, which is usually translated by Western linguists as “road”, actually means a track of some sort.) It is along these side ways, which many Western tank drivers shy from, that the Russians are accustomed to take even logistics vehicles, and it is surely these tracks that a Soviet officer would use in preference to tarmac roads for carrying out his

maneuver. Despite the emphasis laid on maneuver and hitting the enemy in the flank and rear, there has always been discernable a strong tendency for Soviet units to make head-on attacks when evasion of the enemy altogether is not possible. In the context of rapid unit attacks, “deception” often simply amounts to “covert maneuver,” and the *successful* execution of an attack by means of such a maneuver frequently earns the officer in charge the accolade of “having initiative.”

• **Smoke.** The importance of smoke screens as an effective means of providing cover during an attack has become widely recognized in the Soviet press over the last few years. Smoke is now seen as the best way of reducing the effectiveness of NATO long-range antitank weapons. This tactic is most effective, the Soviets maintain, when all types of smoke cover are employed. These include smoke laid on or just in front of the enemy weapon, strongpoint, OP or CP to blind it at close range; lasting smoke screens laid to cover the advance or maneuver of Soviet forces or to reduce visual contact between strongpoints in a defensive position; and false smoke laid to deceive the enemy and distract his attention from the true axis of the main thrust.

Soviet sources maintain that a well laid masking screen reduces the effectiveness of conventional weapons by three or four times, and blinding smoke by as much as 15 times in ideal circumstances. The value of smoke in depriving ATGMs of their range advantage is clear. Even modern ATGMs with semi-automatic guidance take 15-20 seconds to reach their target. If the target can be bracketed with blinding smoke for even part of the five or six minutes that an attacking Soviet tank will be within range, it will greatly enhance the attacking force's viability. The only fly in the ointment is the weather, which may well not be suitable.

Every modern Soviet tank and BMP is fitted with thermo-condensation smoke-generating equipment. This apparatus emits an enormous quantity of smoke, and a platoon can produce a screen sufficient to cover the whole battalion in reasonable conditions. The battalion commander may also be issued with BDSH-5 and BDSH-15 smoke pots. With a wind speed of five meters per second, one pot will give a smoke screen 500 meters long and 100 meters wide for about ten minutes. A static smokescreen can easily be created by igniting the smoke pots and dropping them from a moving tank at about 50-meter intervals. About five tanks will be needed to provide sufficient cover for a battalion.

The unit holds stocks of gun and mortar smoke ammunition, but this has the disadvantage of burning very quickly and unrealistic quantities would be needed to lay a dense screen. Consequently, shell and mortar fire is usually used to lay blinding smoke on weapon positions. This is favored at the end of a conventional barrage, and it is considered feasible, if sufficient shells and guns are available, to bracket the target with smoke so that the motor rifle troops would be able to attack mounted in their BMPs or APCs. The formation commander also has at his disposal the TMS-65 mass decontamination machine for

use as a formidable smoke generator.

In conventional conditions, the Soviet Army can be expected to use vast quantities of smoke during an offensive — especially if they fail to take NATO completely by surprise. The effectiveness of a screen can, given time, be increased by deploying in it radar reflectors and thermal barriers to thwart enemy surveillance radars and IR sensors.

• **Night attacks.** Natural limits to visibility are considered almost as valuable as smoke by present-day Soviet tacticians. After decreasing in popularity over the past ten years, probably due in part to training problems, night attack is again gaining favor in the ground forces. Even if the enemy has night vision devices, the effective range of his heavy weapons will, the Soviets say, be reduced by 25-50 percent. Night attacks, of course, bring enormous complications in command and control, and for this reason they are at present recommended only for operations in flat terrain.

In a night attack, it is usually considered essential by the Soviets to have completed the attack before first light, so as to maintain the advantage of surprise. For the same reason, the artillery preparation may sometimes be dispensed with. To facilitate command and control, the Soviets suggest illuminating the battlefield with star shell at regular intervals and placing parachute flares over the enemy position for the tank commanders to "aim their advance at."

On bright moonlit nights, or in Northern latitudes in summer, i.e., when night vision devices are not needed, the same combat formation is employed as in daytime — tanks leading dismounted infantry and BMPs. On very dark nights, however, or when target illumination is poor, it is usual for tanks to stay in a line with the motor rifle troops and BMPs, and it may be advisable to put two or three infantrymen actually on the tank for its guidance and protection. Prophylactic small arms fire should be turned on flank targets during a night attack, the Soviets teach, so as to avoid casualties amongst one's own men.

CONCLUSIONS

The Soviets fully appreciate the effectiveness of modern antitank defense. They also fully realize the necessity to achieve such total surprise and maintain such a high rate of advance that NATO would never even have time to establish its antitank strongpoints in the first place. The high priority which the Soviet Army allots to "instant combat readiness" underlines the relevance of this point.

Tactical studies and experience in the Middle East have demonstrated quite clearly to the Russians that, at the tactical level, tanks cannot hope to succeed without the support of other arms, including considerable infantry

support. However, the fact that tanks cannot be employed unsupported at tactical unit level does not necessarily mean in Soviet eyes that the same is the case at formation level. The power of a modern defense, even a hastily constructed one, may force a return to mass concentration of forces. The basis of such a mass offensive might be initial assaults on a fairly broad front by combined arms formations with heavy artillery support, followed by massed tank formations maneuvering rapidly so as to be able to exploit weak points in the defense identified by the first wave of the attack. The sheer weight of the massed tank formations plus artillery and air support would be such that they would overwhelm the defense on a narrow front. They would rely on their speed to thwart enemy counter-moves and flank attacks, aiming to beat the withdrawing enemy to its secondary lines of defense and emerge at the operational rear virtually uncontested to threaten the enemy's political and economic centers. This would require a tank army as such, however, and would militate against diluting it with more motor rifle troops and supporting arms which would reduce its reaction time, speed and operational simplicity.

Tank armies, with their armor protection, speed, mobility and maneuverability, are as well structured to operate in nuclear conditions as in conventional ones. Whilst the Soviets affirm that nuclear weapons are the best means of breaking up large armored formations, these weapons would have to be employed before the massed tank formations hit the main defensive line, i.e., at the outset of the war. Once the breakthrough was made, the massed formations could afford to disperse significantly. Delaying the first use of nuclear weapons until the defense had been breached, and the enemy was in strength in the rear, would be shutting the stable door far too long after the horse had bolted.

A powerful campaigner for the maintenance of "undiluted" tank formations is General A.I. Radzievskiy, wartime Chief of Staff of the 2nd Shock Army, and until last year commandant of the Frunze Military Academy. The value of massed tank formations, particularly for exploiting breaches in strong defenses so as to accomplish the rapid overthrow of the enemy, emerges very clearly from his excellent historical studies of offensive operations in the 1941-45 war. His view of the employment of combined arms formations might — at the risk of rather brutal over-simplification — be summarized as follows: their real job is to clear a path in the defense through which the tank formations can then pour and penetrate deep into the enemy rear so as to bring about the enemy's collapse in the shortest possible time.

Thus it is with making the combined arms "broom" sweep the path cleaner that the current Soviet tactical discussion is concerned. It will be interesting to see what new broom will appear should the old one fail to cope.





A SOVIET VIEW



COLONEL V. KOTIKOV

Attack from March Column

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Before passing over to the offensive from a march, the troops disperse in the indicated areas at a certain distance from the front line and then, having completed all necessary preparations in the set time, begin to advance towards the enemy defenses. At first they advance in columns and then deploy into prebattle or battle formation and attack the enemy.

Frequently a motorized infantry battalion in the departure area is disposed by companies along the route of movement or on roads and cuttings adjoining it in a formation ensuring a rapid and organized advance.

The battalion commander indicates the places for his companies and attached subunits, organizes air observation and determines the method of firing at an air enemy, gives instructions on maintenance of combat vehicles, preparation of weapons and personnel for the forthcoming battle, and replenishment of supplies. He organizes the offensive secretly, in a short time and, as a rule, on the terrain. The organization and character of the enemy defenses and also the terrain in the direction of the offensive to the mission limit of advance is thoroughly studied on the map.

On-the-spot reconnaissance is carried out with company commanders and commanders of attached (supporting) subunits. During the reconnaissance they study the enemy defenses in the direction of the offensive and on the flanks, the layout of the FEBA, location of strong points, fire weapons and obstacles and also the installations to be destroyed by the weapons of the senior commander. The battalion commander also defines on the spot the direction in which the main effort will be concentrated, the combat formation of the battalion, combat missions for companies and attached subunits, how to neutralize and destroy enemy weapons, particularly antitank ones, observation posts and other targets by fire of the artillery and tanks detailed for direct fire and also by fire of the artillery attached to the battalion; points out where and how many lanes must be cleared through obstacles; studies the route of advance to the assault position, deployment lines and for an attack on foot determines where the subunits will dismount, and what use will be made of fire by infantry fighting vehicles and armored personnel carriers.

Organization of cooperation of motorized infantry subunits with tanks, artillery and aviation is of paramount importance. The battalion commander indicates how the results of air attacks and artillery fire will be exploited and also coordinates the actions of the companies and attached and supporting subunits during the fire barrage, the attack and in the pressing home of the attack.

When advancing towards the area of operation of a tactical air landing force, the battalion commander gives instructions for linking up with it, signals of mutual identification and radio information for communications.

Before the advance from the occupied area the battalion commander checks the readiness of companies and attached subunits for the offensive,

their supply with everything necessary for the battle and reports to the regimental commander.

At the appointed time the battalion commander announces the time of the beginning of fire preparation and the time of the attack on the forward edge.

In the departure area the subunit commanders exercise control over subunits by personal contact and also with the help of mobile communication equipment. Radio is used only to receive the warning signals.

At the beginning of the advance from the waiting area the subunit commanders move at the head of their columns and control them from infantry fighting vehicles or APCs by the established signals. Radio is used only when fire preparation has begun.

The battalion columns when advancing to the assault position must ensure rapid deployment into prebattle and battle order. For this purpose the companies advance with the reinforcing means and the tanks attached to the motorized infantry battalion at the head of the battalion column.

An artillery battalion assigned to support the battalion, occupies fire positions so as to be ready to open fire not later than one hour before the beginning of the fire preparation. At that time guns and tanks detailed for direct fire advance and take up previously prepared fire positions. Tanks detailed for clearing lanes advance at the assigned time to the designated place, where before the arrival of the main forces they hook on the sweepers brought there beforehand.

The subunits pass exactly at the appointed time the initial point and the lines of deployment into battalion, company and platoon columns. They move at maximum speed, allowing no gaps in the column and no stretching out. During the movement camouflage measures are strictly kept to and observation of the ground and air enemy and the commander's signals is carried out.

The second echelon (reserve) of the battalion up to the deployment line into company columns advances after the companies of the first echelon in the general battalion column, while logistical and technical service subunits follow the second echelon (reserve).

If the enemy delivers a fire strike during the advance to the assault position the battalion rapidly abandons these areas and continues its movement. To replace first echelon subunits which have lost their fighting efficiency, the battalion commander uses the second echelon.

If attacking on infantry fighting vehicles or APCs, when the enemy antitank weapons are reliably neutralized, the motorized infantry subunits deploy into combat line after negotiating obstacles.



If carrying out the offensive on foot the motorized infantry subunits dismount from infantry fighting vehicles or APCs at the indicated places. Dismounting of the personnel is carried out as close as possible to the enemy FEBA and in places covered against machinegun and antitank fire.

Infantry fighting vehicles or APCs using accidents of the terrain advance in leaps from line to line after the friendly subunits, supporting the attack with fire.

Artillery and mortars fire at the enemy trenches on the forward edge and in the near depth and as the tanks and motorized infantry subunits reach the line

of safety from friendly artillery shell bursts they shift fire to the depth on the battalion commander's command.

Exactly at the time appointed for the attack tank and motorized infantry subunits rush to the enemy FEBA, destroy the enemy in the strong points and continue to advance in the depth without stopping.

When the enemy strong points on the FEBA and in the near depth are captured, the battalion sends out a reconnaissance patrol.

In the depth of the defenses the enemy most frequently offers resistance in separate strong points. Therefore the attacking subunits make a broad maneuver with manpower and equipment and daringly approach the enemy flanks and rear. The subunits advance, as a rule, on infantry fighting vehicles or APCs. They mount into vehicles immediately after the enemy ceases organized resistance.

When fighting in the depth of the enemy defenses, it is very important to exploit the results of fire blows as soon as possible. For this purpose the subunits direct their main effort at capturing the areas at which the blows were delivered. During the battle all must keep pace with the advanced subunits.

The subunits capture the enemy strong points on the move, advancing towards them under cover of artillery, tank fire and fire of infantry fighting vehicles, armored personnel carriers and small arms and making use of the camouflage possibilities of the terrain.

On difficult ground for tanks and also in case of slashings and road blocks the advancing motorized infantry subunits can pass the tanks. As these sectors are negotiated, the tanks again precede the motorized infantry subunits and continue the offensive.

To press home the attack (usually after fulfillment of the initial mission) the battalion commander commits to action the second echelon (reserve), which advances on infantry fighting vehicles or APCs in prebattle formation at up to two kilometers from the first echelon companies. With the commitment to action of the second echelon (reserve) the battalion commander reconstitutes the reserve.

During the offensive enemy counterattacks are most likely. Counterattacks by small enemy forces are repulsed by fire on the move. Counterattacks by large enemy forces are beaten off by concentrated fire of all forces from stationary positions. Having detected the advancing enemy, the battalion commander takes a decision to repulse the counterattack and assigns missions to subordinate subunits. To beat off counterattacks successfully, tanks and infantry fighting vehicles or APCs take up fire positions behind the nearest cover, the personnel of the motorized infantry subunits dismount and take up positions ensuring advantageous conditions for destroying the enemy and cooperating with the tanks. The counterattack having been beaten off, the battalion's subunits resume the offensive.

When the enemy starts retreating the subunits immediately pass over to pursuit.

The battalion commander specifies the mission for a fighting reconnaissance or sends additional reconnaissance and assigns missions to subunits for pursuit. He reports his decision to begin pursuit to the regimental commander.

This article is the second in a series of three abstracted and edited from a booklet entitled Winning In The Cold, which was prepared by the 8th Infantry Division. The third, which deals

with the problems of maintaining equipment during winter, follows in the January-February 1981 issue.

27

Cold injury occurs when an unprepared soldier meets winter. The weather, his clothing, the type of combat operation in which he is involved, and his own physical and mental make-up all influence whether he is likely to be injured and to what extent.

According to the NATO Handbook, *Emergency War Surgery* (1975, U.S. Department of Defense), the following are some of the factors that contribute to cold injury:

Weather. Temperature, humidity, precipitation, and wind modify the loss of body heat. Low temperatures and low relative humidity — dry cold — favor the development of frostbite. Higher temperatures, together with moisture, favor the development of trenchfoot. Wind chill accelerates the loss of body heat and aggravates both of these conditions.

Type of action. Soldiers in combat support and combat

service support units are injured far less frequently than those in combat units. A soldier is more likely to be injured if he is often in contact with the ground, if he is immobile for long periods (such as while riding in a crowded APC), if he stands in water in a foxhole, if he is kept out in the cold for days without being warmed, or if he does not have opportunities to take care of his personal hygiene. Defense, delay, observation post, and sentinel duties also create, to a greater extent, fear, fatigue, dehydration, and lack of nutrition — all of which further increase the soldier's vulnerability.

Clothing. Most soldiers who suffer cold injuries are improperly dressed. Leaders must see that their troops dress as lightly as possible consistent with the weather to reduce the danger of excessive perspiration and subsequent chilling. It is better for the body to be slightly cold and generating heat than



excessively warm and sweltering toward dehydration. However, most cold injuries result from the soldiers' having too few clothes available when the weather suddenly turns colder.

Previous cold injury. Soldiers with prior cold injuries have a higher-than-normal risk of subsequent cold injury. They are unlikely to be injured in the same places on their bodies, but their overall susceptibility is surely higher.

Fatigue. Both mental and physical weariness contribute to apathy, which leads to inactivity, personal neglect, carelessness, and reduced heat production, and so to cold injury.

Other injuries. Wounds or illnesses may cause a soldier to be immobilized, which affects his blood circulation, which in turn predisposes him to cold injury.

Discipline, training, and experience. Cold injuries can be prevented. Well-trained and well-disciplined men can be protected even in the most adverse circumstances, if they and their leaders know the hazards of exposure to the cold and the importance of personal hygiene, especially exercise, the care of the feet, and the use of protective clothing.

Psychological factors. Fear acts to reduce the body's ability to rewarm itself and thus increases the incidence of cold injury. Passive, negative, and hypochondriacal soldiers are also vulnerable because they are less active — even in situations where activity is not restricted — and they are careless about precautionary measures, especially warming activities, when cold injury is a threat.

Race. In all studies concerning World War II and Korea, black soldiers had from four to six times as many cold injuries as Caucasians with the same training, education, and geographic origin. This is not to say that blacks cannot be protected against injury or that they cannot soldier in the cold. It does mean, though, that both the black soldier and his leader must be especially careful in cold weather.

Sex. As far as is known, cold injuries occur equally in both sexes if proper preventive actions are not taken.

Drugs and medication. Any drug that modifies the body's responses, alters sensation, or affects judgment or motivation — and that certainly includes alcohol — can have disastrous effects on individual performance and survival in the cold. Alcohol poses a special danger for cold injury because it affects judgment and because it speeds the loss of heat from the body.

SYMPTOMS

Once a leader has become familiar with the factors that contribute to cold injury, he must learn to recognize the symptoms when such injuries occur.

Many soldiers suffer cold injury without knowing what is happening to them. They may be cold and generally uncomfortable, but they often do not notice the injured part because it is already numb from heat loss.

Superficial cold injury usually can be detected by numbness, tingling, or "pins and needles" sensations — symptoms that often can be relieved simply by loosening boots or other clothing and exercising to improve circulation. But in more serious cases involving deep injury, the soldier often is not aware that there is a problem until the affected part feels "like

a stump" or "like a block of wood."

Early outward signs of cold injury include discoloration of the skin at the site of the injury. In light-skinned persons, the skin first reddens and then becomes pale or waxy white; in darker-skinned persons, greyness is usually evident. An injured foot or hand feels cold to the touch, while swelling is an indication of deep injury. Soldiers should work in pairs — buddy teams — to check each other for signs of discoloration and other symptoms. Leaders should also be alert for signs of cold injuries.

Once a cold injury is suspected, the problem in administering first aid within the unit is in deciding whether the injury is superficial or deep. Cases of superficial frostbite can be adequately treated by warming the affected part using body heat — for example, covering cheeks with hands, putting fingertips under armpits, or placing feet under the clothing of a buddy next to his belly. Under no circumstances, though, should the injured part be massaged, exposed to a fire or stove, rubbed with snow, slapped, chafed, or soaked in cold water. Walking on injured feet should be avoided.

If the injury appears to be deep, the injured soldier should be moved at once to an aid station where the affected part can be rewarmed under medical supervision.

Often, a suspected deep injury will turn out to be a false alarm, and the soldier, warmed and rested, can soon be returned to duty. In case of doubt, though, the soldier should be evacuated, since it is difficult at first even for a doctor to diagnose the extent of injury.

(Signs, symptoms, and first aid for the various types of cold injury are found in the Soldier's Manual of Common Tasks, FM 21-2, 31 August 1977.)

PREVENTION

Prevention is always better than either first aid or evacuation. Any unit that must operate in the winter should have a detailed plan for fighting in cold weather — a plan that requires the concerted effort of all its leaders.

These are some of the things the leaders must do:

Provide adequate uniforms and individual equipment.

In winter, each soldier must have his complete cold weather gear available — including sleeping bag, insulated boots, gloves, field jacket liner, and the like. These clothes are usually adequate — if they fit, if they are available to the soldier when he needs them, and if he wears them right. It is the leader's responsibility to see that they do fit, that they are available, and that the soldier knows how to wear them.

Because each soldier produces heat and loses it at his own rate, leaders must not be arbitrary in specifying exactly what each man should wear. Winter underwear, though, especially bottoms, should be required at all times.

Other clothing should be worn loose and in layers so that it can be vented at the neck. Clothing and footgear that are too tight can restrict circulation and invite cold injury. Tight garments lessen the volume of trapped air layers and thereby reduce the insulation and ventilation available to the body.

Headgear is important because heat loss is often greatest from the head. Footwear is also vitally important. Whenever



there is danger of cold weather and prolonged exposure to the cold, the soldier should be equipped with both insulated boots and overshoes.

The feet perspire more and are generally not as well ventilated as other parts of the body, regardless of which type of boot a soldier is wearing. Insulated boots are better for troops who are in contact with the ground for prolonged periods, but leather boots and overshoes may be better in situations where activity is so intense that the feet sweat a lot and socks become wringing wet.

Rotate and warm troops. Soldiers who fight on foot should be conserved for tactical use at night and during periods of reduced visibility through exercise, warming, nourishment,

or rest sessions alternated with alerts in tactical positions.

During long road marches and cross-country moves in cold weather, soldiers are often jammed into cramped positions in APCs, and air guards are subjected to special hazards from wind chill. Leaders must interrupt such moves at least once an hour to exercise troops vigorously. Group calisthenics is a good solution.

Track commanders, drivers, and air guards require extra protection against wind chill and may have to be rotated or exercised even more often.

Dug-in fighting positions can be equipped to warm troops — for example, with a stove under overhead cover, or a candle in a poncho-covered foxhole — or a warming shelter (a tent or

a building) must be provided where troops can be sent at least every two hours for warming, rest, and refreshment.

Establish buddy teams. As mentioned earlier, buddy teams should be used, and each man should know that he is responsible for checking his buddy for signs of cold injury and, in a fighting position, for spelling-off his buddy while he warms up.

Plan for sleeping sites. Sleeping in armored vehicles should be expressly forbidden, whether they are heated or not. Aside from the hazards of carbon monoxide poisoning, an armored vehicle surrounds a sleeping soldier with hard cold surfaces that rapidly conduct heat away from his body.

Each unit must, therefore, have some other sleeping place. For instance, each tank might carry two shelter halves with pins and poles so that two men can sleep while two are on watch in the tank. A rifle squad might carry a small hexagonal tent, or a nearby farm building might be designated as the sleeping site.

Leaders must realize that cold injury strikes many soldiers while they are asleep — a tired man drops off, his circulation slows, numbness sets in, and when he awakens his feet are dead weights.

Because clothing worn in a sleeping bag can bind and restrict circulation as he turns in his sleep, the soldier should pull on his bag over the least possible amount of clothing and never over wet clothing, especially socks. A soldier should never be permitted to crawl into his sleeping bag with his boots on; boots restrict circulation and invite frostbite.

The soldier should put as much insulation under his sleeping bag as he can — preferably an air mattress, but if one is not available, cardboard, newspaper, or evergreen branches.

Each soldier should be taught to exercise vigorously before he gets into the bag so that he will heat the bag quickly. A small man should be taught to fold the excess portion of the bag underneath his body inside the sleeping bag to reduce the amount of air in it that needs to be warmed.

If a stove is used in a shelter, the leader must make sure it is safely positioned and tended. Shelters should be sited in covered and concealed positions, out of the wind and as close to vehicles or fighting positions as possible. It is a good idea to standardize the location of sleeping shelters in relation to APCs or tanks as much as practicable and to mark the trail from the vehicle to the shelter with white engineer tape or something similar.

Provide for personal hygiene. Washing is important in promoting circulation and maintaining the health of the skin, which is, after all, the part that is endangered by cold injury. Washing feet, hands, crotch, and armpits is especially important. A soldier can wash his entire body with the equivalent of two canteen cups of water — one for soaping and washing and the other for rinsing.

Access to a bath unit or to showers in a building should be arranged weekly, and these occasions should be used to inspect clothing and to replace by direct exchange soiled or damaged items.

Clean socks should be provided in any event, but special attention should be paid also to headgear and underwear. Clothes that are matted with dirt and grease lose much of their insulating property; air pockets formed by the cloth fibers

become clogged or crushed, and heat is readily transmitted. It is a good idea for the soldier to wear summer underwear under his winter underwear to help keep the latter cleaner of body oils.

A soldier can dry his wet socks or gloves by pinning them, unfolded, under his shirt where his body heat will dry them. Every soldier should have at least two extra pairs of dry socks with him so that he can change them at least twice a day. Each time he does so, he should massage his feet — preferably washing them — and dry them thoroughly before replacing his boots.

Beards should be shaved and the hair combed daily. A beard or long hair adds very little insulation and soils clothing and headgear with natural oils. More important, facial hair forms a base for the buildup of ice on the face from breath moisture, and it can hide frostbite symptoms.

Arrange for crew or squad messing. Because the body derives the energy to keep itself warm from food, proper nutrition is essential for warding off cold injury. Dehydration, also, can be as much a problem in the winter as in the summer; soldiers who are working hard while wearing winter clothing lose a lot of body water.

It is not always possible, even in peacetime winter exercises, to move hot rations to forward elements. It is therefore important that each small unit — each armored fighting vehicle, gun crew, communications team, and so on — be equipped and trained to warm its own rations and to prepare its own hot beverages. Digesting a cold ration requires the body to expend as much energy as the ration provides, so there is no net gain in heat.

Allow no alcohol or drugs. Alcohol is a depressant. It causes body temperature to drop, furthers dehydration, deadens pain that might otherwise signal cold injury, and renders soldiers drowsy and inactive. Most other drugs similarly invite cold injury.

Moreover, drugs — including alcohol — increase sharply the possibility of accident and injury or death from carbon monoxide asphyxiation, falls, and vehicular accidents.

Regard every winter day as a training day. Every leader must know when cold defensive measures are necessary, and he should plan, manage, and conduct training for cold weather operations every day — in garrison or in the field, at peace or war.

The main problem in training soldiers to avoid cold injury is that the soldiers most likely to be injured are the same ones who are most likely to be absent from training when unit instruction is held. These include the junior troops who are away on details and the new arrivals who are busy in-processing. Moreover, a single class in November is not likely to be remembered in February. For these reasons, it is far more important to train NCOs and junior officers to know what must be done in the field to meet the challenges of winter warfare than to try to train every single soldier in garrison.

In war and in field exercises, meeting winter warfare standards will depend on the quality of leadership provided in forward platoons and sections. These leaders must overcome both the environment and the enemy, and they must never allow energies expended in the former struggle to prevent success in the latter.



THE military sidearm

LIEUTENANT RICHARD C. FARNSWORTH

For 70 years, the 1911 and 1911A1 pistols have served the United States Army and other military and civilian forces as a primary sidearm. For many of those years, though, its position has been challenged, and several different tests and programs have been conducted to study possible replacements. Today, the weapon is again being challenged, this time as a result of a series of tests that were recently conducted by the U.S. Air Force, which has been seeking a weapon to replace its M15 revolver.

Now, a program has been established by the Joint Services Small Arms Program Management Committee to look at the results of the Air Force tests with a view to standardizing service handguns. At the moment, these tests indicate that the Air Force favors a double action, 9mm Parabellum semiautomatic pistol. But before we seriously consider that weapon as a replacement for the M1911A1, we should think about weapon effectiveness, single action versus double action functioning, and improvements that could be made to the M1911A1 to make it a better weapon.

In 1901, Georg Luger designed an automatic pistol, which was named for him, and a 9mm cartridge for it, which he named *Parabellum* (meaning "for war"). Since the German Navy adopted it in 1904, it has become the most popular military pistol and submachinegun cartridge in the world. Only a handful of Free World countries, notably Norway, Mexico, Argentina, and the U.S., use the .45 caliber automatic Colt pistol (ACP) round instead. The Soviet Bloc countries use several pistols of their own design chambered for either their 9mm Marakov or their 7.62mm Tokarev rounds. The Marakov round is ballistically closer to our .380 ACP than the 9mm Parabellum, while the Tokarev round is known in this country as the .30 caliber Mauser.

RELATIVE STOPPING POWER

In 1935, General Julian Hatcher, United States Army, produced his *Textbook of Pistols and Revolvers*, the premier work

on the relative effectiveness of various pistol and revolver cartridges. General Hatcher's work still stands as the definitive work in the field. He saw a proportional relationship among the various options such as bullet shape, bullet weight, and velocity. This relationship yielded a factor that he called relative stopping power (RSP).

To put it simply, the RSP is the ability of a particular round to incapacitate an attacker. The General held that, statistically, a rating of less than 50 would stop an attacker no more than 50 percent of the time, and that a rating below 30 might not stop an attacker even after repeated effective hits. An RSP of better than 60, General Hatcher wrote, would stop an attacker 95 percent of the time, assuming solid torso hits. Actually, a 95 percent rating is the best any small arm will do. (The FBI has in its files, for example, shootings in which solidly placed torso hits with 12-gauge slugs have failed to stop a felon.)

Effectiveness, as used in this article, is assumed to mean the ability of a weapon to incapacitate an attacker with a solid, single torso hit. Figure 1 shows the relative effectiveness of various handguns and their relative recoil.

In reality, there are two kinds of recoil: theoretical and perceived. Theoretical recoil, which can be easily calculated from Newtonian physics, is the recoil that is shown in Figure 1. Perceived recoil, on the other hand, is the way a gun's "kick" feels to a firer. This is why a gun with a bore line higher above the hand seems to kick harder than another whose bore line is lower. The perceived recoil of my Browning hi-power (9mm NATO), for example, is as intense as that of my M1911A1. Anyone who has fired both weapons can verify this.

In Figure 1, the recoil is given in foot-pounds for a 39-ounce pistol, except for the .38 Special two-inch barrel, which weighs 19 ounces. No 39-ounce pistol is chambered for the .44 Magnum, for obvious reasons.

Double action automatic pistols present four major problems:

- The trigger pull needed to cock the hammer must be long and hard and it is needed only for the first shot because, for the

Caliber	Bullet Weight	Muzzle Velocity	Bullet Shape (6)	Shape Factor	RSP (7)	Recoil
.30 Mauser (1)	85	1280	FMJ	.9	16	2.2
.380 ACP (2)	85	955	FMJ	.9	18	1.6
9mm P 4" Barrel	124	1100	FMJ	.9	27	3.0
.38 Special (3)	130	825	FMJ	.9	22	2.1
.38 Special, 2" Barrel	158	668	LRN	1.0	24	4.3
.38 Special, 4" Barrel	158	790	LRN	1.0	28	2.7
.38 Special, +P	158	930	LRN	1.0	33	3.6
.357 Magnum (4)	158	1320	SWC	1.25	59	6.9
.38 Long Colt (5)	148	763	LRN	1.0	26	2.3
.44 Magnum (4)	240	1250	JHP	1.25	122	13.4
.45 ACP 5" Barrel	230	815	FMJ	.9	60	5.6
.45 Long Colt (5)	255	860	LRN	1.0	79	7.5

Notes:

- (1) The .30 Mauser, in this lower loading is approximately equal to the Soviet 7.62mm Tokarev.
- (2) This loading shows the lower limit of the Soviet 9mm Marakov. Also, this is the caliber of the Turkish service sidearm.
- (3) Of the four loads shown for the .38, the first is the U.S. military version of the ubiquitous .38 Special; the next two are standard velocity loads to show the effect of barrel length; and the fourth is the new, high-velocity, high-pressure load.
- (4) The .357 Magnum and the .44 Magnum are shown for comparison. The bullet shapes are hunting styles, not of interest to soldiers.
- (5) The .38 Long Colt and the .45 Long Colt were the standard U.S. military sidearms before 1911 (.38 L.C., 1891-1901; .45 L.C. 1873-1891 and 1901-1911).
- (6) The bullet shape and shape factor are described and justified in General Hatcher's book. Time and custom, however, have altered the original 9mm Parabellum bullet shape to conform to the military standard.
- (7) The General's math become easier with the new pocket calculators. This table is accurate to the eighth digit and rounded to significance.

Figure 1



other shots, the hammer is cocked by the recoiling slide. Therefore, the grip on the pistol must be changed to address the trigger for the second and subsequent shots. The firer must have additional training to be able to deliver a double action shot accurately. On the training range and the practice range, the hammer is usually thumb cocked, which further increases the training cost and time and negates the advantage, if any, of the double action trigger.

- On some models, the safety locks the trigger in the hammer cocked position. The trigger must then be allowed to cycle forward before it can engage the hammer cocking mechanism.

- The weapon can still discharge if it is dropped and lands on its muzzle, unless the safety is applied and is of the firing pin block type.

- The safety, if any, is usually awkward to reach and can be deactivated only with a motion that is the opposite of the usual method of activating the weapon.

1911A1 IMPROVEMENTS

In its present configuration, the M1911A1 gives the most effective firepower and provides the best functional reliability. It has stood the test of time and is head and shoulders above any other weapon, long or short. No weapon has served the U.S. armed forces for as long as the M1911 or M1911A1 has. But the following suggested improvements would make it even better:

- The grip safety should be eliminated.
- An accurizer barrel bushing should be installed. The M1911A1 is an inaccurate gun. With all pistols, we can have either "gilt-edged" accuracy, such as with the Colt "Gold Cup" (the premier target variant of the M1911A1), or the ultimate reliability of the M1911A1. Colt made notable strides to improve the accuracy of the M1911A1 without sacrificing its reliability in the "Government Model Mk IV, Series '70," by eliminating the rather casual fit of the bushing to the barrel muzzle. Accuracy is markedly improved if the barrel returns to the same position, relative to the slide, after each shot.

- On the subject of accuracy, the sights should be enlarged. This will not really improve the gun's accuracy, but it will

encourage better shooting, which, in turn, will inspire the user's confidence in the weapon.

- The armed forces should consider adding an ambidextrous thumb safety to the next generation of this pistol. This is not only for left-handed shooters, but to enable any firer to use the weapon with his left hand if he needs to do so.

- There should be a lock that links the thumb safety and the firing pin so that when the thumb safety is applied, the firing pin is locked in its normal position even against an accidental hammer drop. Further, the firing pin lock should have a beveled face so that when the thumb safety is released, a normal hammer drop will push the lock out of the way and discharge the weapon should the lock become clogged or jammed.

The above modifications would result in a third generation M1911, probably the M1911A2, but would not require the production of an entirely new gun. The Army claims that its existing M1911A1s are worn out and that no new guns have been purchased in decades. I suggest that the cost effectiveness of a depot refit of the Army's existing repairable guns would be better than the wholesale replacement of all of the guns.

TRAINING

At the same time, training with the pistol should be stepped up. Combat soldiers do have occasion to use a sidearm as a personal defense weapon, and when a sidearm is needed it must be ready, effective, and reliable. The Army invests a great deal of money in its combat arms officers and others equipped with a sidearm, and it would be the height of folly to lose them because their last line of personal defense wasn't ready, effective, reliable, or accurate. Further, under no circumstances should any person be issued a sidearm in conjunction with any duty until he has fully qualified with that sidearm.

The Army's qualification standards should be reviewed periodically to make sure the soldier can defend himself by using his service sidearm to engage targets in situations similar to ones he could expect to encounter in combat.

With the above modifications and an increase in training time, Mr. Browning's pistol would continue to give the user the best possible sidearm and the Government the best "bang for the buck" well into the next century.

LIEUTENANT RICHARD C. FARNSWORTH, an Infantry officer, presently serves as the Training Officer, Company B, 3d Battalion, 416th Regiment, 2d Training Brigade (BCT), 104th Division (Training), United States Army Reserve. He holds a bachelor's degree in business administration from the University of Washington, and has completed the Infantry Officer Basic Course.

TRAINING NOTES



WEAPON MAINTENANCE

CAPTAIN MERRIT P. DRUCKER

The mission of an infantry company is to close with and destroy the enemy. To do this, infantrymen must have weapons that have been properly cared for. An effective company-level weapon maintenance program will see that they are.

To develop such a program, a commander must have a well-trained armorer; a clean, efficient, and secure arms room; and all the necessary publications, tools, parts, and supplies. The first of these items — the well-trained armorer — is, of course, the key item.

The soldier selected to be the unit armorer should be highly motivated and trustworthy, capable of reading and comprehending what he has read, able to learn the Army maintenance system, and able to understand and use the supply system. He must also be the kind of soldier who can take an aggressive approach to his duties. Once he has been selected, he must be properly trained to perform his duties.

Most installations have a unit armorer course, but for those that do not, the direct support maintenance unit can and should offer a course periodically to train armorers. If the direct support maintenance unit does not operate such a school, then the armorer has to learn his job through on-the-job training either

with an armorer in another company or by working with the direct support maintenance unit's small arms repair section. Unfortunately, these alternatives are often a case of the blind leading the blind. Finally, if none of these training methods is available, a unit NCO or officer may have to train the company's armorer, and if the selected soldier is highly motivated, he can learn a great deal on his own from reading technical manuals and other publications.

By MOS, the unit armorer is a 76Y. If a soldier with another MOS must be used as the armorer, an OJT program should be started for him, and it is important that he be awarded the 76Y MOS as soon as he has demonstrated his ability to handle the job.

Although the unit armorer is supposed to be supervised by the unit supply sergeant, in many units, for various reasons, the supply sergeant no longer takes care of this responsibility. Since there is a close relationship between maintenance and supply, though, and since many maintenance activities in the arms room involve requisitioning parts and equipment and procuring expendable supplies, the supply sergeant is still the person best qualified to supervise and assist the armorer.

A company usually has less choice in

selecting its arms room than it has in selecting its armorer since arms rooms are usually designed as such and cannot very well be used for anything else. Even the worst physical setup can be improved, though.

First, the arms room must have good lighting. Bright, fluorescent lights, all of which are working, allow the armorer to see dirt and rust on the weapons. The ceiling and walls should be freshly painted, preferably a light color, which will reflect light and make the room brighter. The paint should also be durable enough to withstand repeated washings. The floor should be in good condition and easy to clean. All arms rooms racks, boxes and cabinets must be serviceable, clean, and freshly painted.

Every effort should be made to limit the moisture in the arms room. All equipment should be dried off before it is put away, leaking pipes should be repaired promptly, and the armorer should not store his wet rucksack or other personal items in the arms room. A dehumidifier can be especially helpful.

The armorer should have a small desk, a chair, and a cabinet for storing small items. Finally, the arms room should be kept as neat and clean as possible. Trash should be emptied, the floor swept and mopped often, and the light fixtures and

cabinets should be dusted at least once each week.

Although the security of weapons may not be directly related to maintenance, every armorer and commander must become intimately involved in it. All racks, cabinets, chains, locks, doors, and walls must meet current security requirements.

PUBLICATIONS

Forms, records, and publications are another aspect of security, and the commander must see that his armorer has all the required publications on hand. Usually, the battalion S2 or the officer designated as the security manager can provide a list of these publications.

The armorer must also have all the required security forms and records on hand and must know how to complete them. Issue and turn-in forms, inventory sheets, and security inspection forms must be completed daily, and attention to detail and adherence to established regulations is critical.

These are the publications the armorer will need:

- The operator's technical manuals for all assigned weapons.
- The organizational maintenance manuals for all assigned weapons.
- The supply catalog for the tool chest.
- TM 38-750, with changes.
- A copy of the company maintenance SOP.
- A copy of the DS maintenance unit's external SOP.
- Required policy letters, SOPs, and regulations.
- An adequate supply of maintenance forms: DA Forms 314, 2402, 2404, and 2407, as well as weapons cards and locally produced security and inventory forms.

For publications that cannot be obtained locally, a proper requisition should be submitted and a current copy kept on hand in the arms room. The battalion S1, who has staff responsibility for publications supply, must take an active interest in helping the companies in this aspect of maintenance. Publications should be checked frequently against DA Pamphlet 310-4 to see that they are cur-

rent and that all required changes have been posted. Unit requisitions should be updated every 90 days.

Maintenance procedures are defined in TM 38-750, equipment technical manuals, and unit SOPs. While it is possible to operate a successful maintenance program without following the Army maintenance system, it is usually more difficult and less effective.

The basic working document in the arms room should be the DA Form 314, which breaks down the workload into a series of daily tasks. By checking the equipment organizational maintenance manual, the armorer can determine which organizational maintenance is to be performed daily, weekly, monthly, and quarterly. First, he should have the DA Form 314 displayed so he will know which weapons he is supposed to be working on, and next he must have the organizational maintenance manual open nearby. Then he must follow the technical manual page by page, item by item, to make sure maintenance is being performed properly. This is the only method of maintaining small arms that guarantees success.

It is helpful if all of the weapons that belong to one platoon are scheduled for maintenance within a two- or three-day period. This allows the commander to spot-check all the platoon's weapons, and it gives the platoon priority of maintenance during that period. It also enables the platoon sergeant to work with the armorer and inspect all of his weapons at the same time, and helps reinforce the role of the chain of command in weapon maintenance. Each soldier must be taught at some time how to properly clean, lubricate, disassemble, and assemble his individual or crew-served weapons and how to detect broken or missing parts. Squad leaders, platoon sergeants, and platoon leaders should be held strictly accountable for the maintenance of the weapons assigned to their soldiers.

To perform the organizational maintenance on the unit's weapons, the armorer must have all the authorized tools and must be able to obtain repair parts. His tool set should be inventoried weekly to make sure it is complete. Missing tools should be accounted for and replaced,

and broken ones should be turned in and replacements obtained. The armorer should sign for the tool set on a DA Form 2062, and he should be cautioned not to lend tools to others. (The arms room officer can inspect the tool box when he conducts his inventory.) When his unit deploys to the field, the armorer must take his tool box along so that he can perform organizational maintenance in the field.

REPAIR PARTS

The armorer's ability to obtain repair parts will have a direct effect on the organizational maintenance program. First, he must have the appropriate technical manuals on hand, and he should provide the company or battalion PLL clerk with the information he needs to complete the DA Form 2765-1. For this purpose, most units use an overprinted DA Form 2496 or some other locally devised form.

The armorer must make sure that all of the parts he needs are on valid requisitions at all times. He should have the document numbers for any requests immediately available, and his repair parts status should be checked frequently.

Parts for weapons are sometimes neglected on the unit PLL. If the record of demands, DA Form 3318, is accurately maintained, enough repair parts can be added to the PLL. Special attention should be paid to high-turnover items such as M16 handguards, M203 barrels, and sears and extractors for machine-guns. Excess parts should not be allowed to accumulate but should be returned to the PLL section and then to the system. Such items as magazines, weapon cleaning kit cases, and spare barrel bags should not be forgotten, since they are essential Class IX items.

It is absolutely essential that there be a complete cleaning kit for every weapon in the unit, and a few extra won't hurt. Most units find it necessary to budget some money every month for the purchase of cleaning material. Such expendable supplies are usually obtained from a Self-Service Supply Center.

There are several methods for controlling cleaning kits. Regardless of the

method used, fairly rigid controls should be established to prevent an excessive loss of these items.

If a unit is having severe maintenance problems with small arms, there are some immediate steps the commander can take to improve his maintenance program. He should:

- Not accept any weapon into the arms room unless it is completely cleaned and lubricated. It is more efficient to take a few more minutes to have the weapon cleaned than to go through a complete turn-in and issue later.

- Pay particularly close attention to weapons that are used less frequently — bayonets, shotguns, sniper rifles, special-purpose weapons, and pistols.

- Get to know the officer-in-charge of the direct support maintenance shop.

- Request an assistance visit from the local maintenance assistance instruction team, and when the team comes make sure it does more than make a cursory inspection of a few rifles. Have the team come back frequently.

- Turn in broken weapons immediately.

- Set high standards and keep to them.

- Allow each soldier to keep the same

weapon for as long as possible, instead of rotating weapons between soldiers.

- Set a goal of two school-trained armorers per platoon. They can assist greatly in upgrading the overall unit proficiency in weapons maintenance.

- Spot-check several weapons each day for cleanliness, functioning, and completeness.

- Conduct rifle PT occasionally. This is a good way to get most of the weapons issued and cleaned while the unit is in garrison.

- Ask other companies in the battalion for assistance, if necessary. They

may have more experienced armorers who can help.

The final test of a unit's weapon maintenance program comes when the weapons are fired. Sometimes a weapon can pass a maintenance inspection with flying colors and still not function properly. Therefore, all of a company's weapons should be fired periodically to see that they work.

Almost without exception, infantry soldiers take pride in their weapons. If these soldiers are to do their jobs as infantrymen, the tools of their trade must be professionally maintained.



CAPTAIN MERRIT P. DRUCKER is an Infantry officer who is assigned to the Engineer Center Brigade at Fort Belvoir. He graduated from the ROTC program at St. John's University in 1973, and has served in various command and staff positions with the 1st Battalion, 508th Infantry. He completed the Infantry Officer Advanced Course in 1979.

MAINTENANCE WEEK

CAPTAIN JACK H. CAGE

One of the big jobs a mechanized infantry company commander faces is seeing that his organizational equipment is properly maintained.

The purpose of the periodic preventive maintenance service (PPMS) is to verify the operational condition of the equipment and to make the repairs, checks, and adjustments that are needed to insure trouble-free operation until the next

scheduled preventive maintenance service. Too often, though, such scheduled service is conducted with a new ball-point pen or, at best, with a quick oil change.

There is, of course, a required quarterly service for personnel carriers, but it, too, has some limitations. An on-paper Q-service can be easily performed during periods of crisis maintenance, and ancil-

lary equipment — such as protective masks and waterproof bags — is often forgotten until the unit's AGI is just a few days away. Another problem with Q-service is that the vehicle inspections are often performed by mechanics who do not have the Organizational Technical Manual (-20 TM).

What a commander needs, therefore, is a more detailed, systematic, and highly

supervised maintenance period for each platoon that will help him to see that all of his equipment is consistently maintained.

One solution is to hold a periodic "Maintenance Week," during which each platoon's organizational equipment receives its PPMS, not only on its personnel carriers, but also on its other vehicles and equipment. The PPMS should be executed in accordance with the exact provisions of the applicable technical manuals, and all of the rest of the platoon's equipment and the soldiers' equipment and records as well should be inspected and serviced at the same time. For that week, the entire platoon should be present, including its leaders, and it should be permitted to stand down for that period.

If possible, all or most of Maintenance Week should be performed in the motor pool. A central location will simplify the control of personnel and provide a large area for setting up cleaning equipment, such as immersion heaters, to clean CBR and TA-50 items.

Initially, the Q-service on some vehicles will have to be rescheduled to fit the time planned for Maintenance Week. To do this, it might be necessary to perform early service on the vehicles — outside the ten percent variance allowed in TM 38-750. Assuming that permission to do so is granted by the battalion commander, the Q-services should be performed on the "near side" of the allowable 90-day/750-mile parameters so that each platoon's vehicles are all within the same ten percent allowance.

The Q-service on each vehicle must follow that vehicle's technical manual specifically. To allow a 63C tracked-vehicle mechanic to inspect or service an M113A1 from memory is not only poor maintenance procedure but also poor publications discipline.

All of the faults noted as a result of the inspection should be entered on the included DA Form 2404, no matter how minor they may seem. The form can then be color-coded by the motor sergeant into the following areas:

- NORS/NORM.
- Higher echelon work required.
- Parts.
- Crew responsibilities.

- Organizational/mechanic responsibilities.

Several of these areas may overlap, but the items that cause a vehicle to be classified as not operationally ready must be annotated to insure immediate attention. The breakdown of responsibilities should be determined through the use of the applicable Maintenance Allocation Chart (-20 TM).

If parts are required, the mechanic or motor sergeant should hand-carry the completed DA Form 2404 to the TAMMS clerk, refer to the Organizational Parts Manual (-20P TM), and show the part needed to the clerk to make sure that latter orders the right part.

For higher level maintenance on a ve-

toon's chain of command.

The number of copies of the inspection worksheets should be determined by the commander and the motor sergeant. At least one copy should remain in the vehicle's file so that follow-up action can be easily traced, especially for parts. One copy should be held by the mechanic until his level of maintenance has been corrected and verified, at which time it can be issued to the crew and the chain of command.

Maintenance Week should also include the maintenance of all the organic equipment issued to the platoon and to the soldiers themselves. The organizational equipment should include crew-served and individual weapons, CBR

SAMPLE SCHEDULE			
	VEHICLES	PLATOON EQUIPMENT AM	PM
MON	In-briefing to all personnel Road Tests Inspection Services	BII Update hand- receipts CBR	Indiv Wpns
TUE	Inspection Services Correction of faults Parts ordered Clean engine compartment	Crew Wpns	ID Cards and Tags LES Meal Cards SIDPERS Maintenance Class
WED	Services Correction of faults Commo TI Parts ordered	TA 50 Clothing records	Initial Issue Clothing Record
THURS	Review TAMMS Welding Services Verify parts requisitions	AGI Requirements Mandatory Training	Training Records Mandatory Training
FRI	Final road test Correct faults Return vehicle to crew Verify all parts ordered Order parts/filters for next Q	Finance/ personnel appt.	Class A, in rooms. Inventory installation equipment.

Figure 1

hicle, including welding, local procedures that govern the use of DA Form 2407 (Maintenance Request) must be initiated immediately. At the same time, items previously labeled for "deferred maintenance" should be corrected.

The platoon's mechanics should correct organization level faults before the end of each Maintenance Week, and the finished work must be inspected by either the motor sergeant or the senior vehicle mechanic. Similarly, each vehicle's crew should be inspected by the pla-

equipment, and basic issue items. Other items that can also be inspected or serviced are TA-50 equipment, initial issue clothing, identification cards and tags, training records, meal cards, driver's licenses, and leave and earnings statements.

Several points are fundamental to the success of the platoon equipment portion of Maintenance Week:

- The soldiers must be informed.
- The inspectors must be prepared.
- The applicable publications must be

on hand and used along with a DA Form 2404.

- The "subject-area experts" must be present when they are needed — the supply sergeant, armorer, CBR NCO, and the like.

The training schedule for Maintenance Week can be annotated in either of two general ways: A day-by-day breakdown of activities can be annotated on each training schedule so that there is no doubt as to who is performing which task and where; or a very detailed unit SOP can be maintained in the unit files that lists all of the above information. Each subelement, such as each platoon and the company's maintenance section, would maintain a copy and follow its guidance. In the latter case, the weekly training schedule would list only "Maintenance Week, Unit SOP dated _____."

Figure 1 demonstrates how the two aspects of Maintenance Week can be meshed. The amount of guidance provided to the platoons and the maintenance section can be tailored to each unit's maintenance status as seen by the company and battalion commanders.

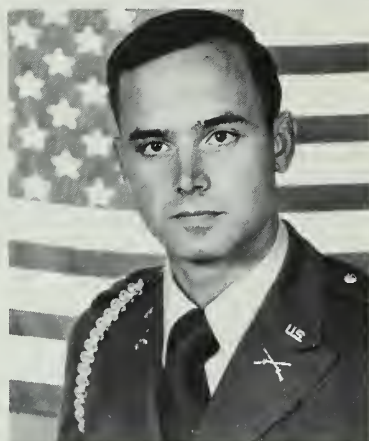
If servicing a platoon's vehicles in one

week seems to be too much, a platoon leader can get help through one or more of these means:

- Borrow mechanics from other companies, or use "platoon mechanics" — soldiers who have a special knack with vehicles.
- Assign members of the platoon chain of command to assist the TAMMS clerk.
- Get permission to extend the "week" up to nine days.

The concept of a Maintenance Week is

not intended to represent a new system of organizational maintenance, but rather to emphasize an already effective method. The maintenance of vehicles must be systematic, and it must be done by qualified mechanics. This is the only method that offers a reasonable assurance of consistent quality maintenance. By using the Maintenance Week concept effectively, a mechanized infantry company commander can bring order to his maintenance procedures and improve the readiness of his company.



CAPTAIN JACK H. CAGE graduated from the United States Military Academy in 1975. He commanded a mechanized infantry company in the 2d Armored Division, and wrote this article while attending the Infantry Officer Advanced Course in 1979. He is now enrolled in Columbia University where he is preparing for a future assignment to the Military Academy.

Maneuver Commands

MAJOR WILLIAM L. HOWARD

In early 1973, the United States Army selected several of its Reserve training divisions to form Maneuver Training Commands (MTCs). It was expected that these new commands would plan and conduct training tests (ATTs), map maneuvers, field training exercises (FTXs), and command post exercises (CPXs) for the battalions and lower echelon Reserve Component units in the readiness regions to which the MTCs were assigned.

The 100th Division (Training), in Kentucky, formed one of the new MTCs

in June 1973. Its organizational chart resembled a corps headquarters plus a unit called the umpire group.

During its first year, most of the personnel assigned to the MTC attended a summer camp at Fort Knox, where they learned how to conduct the various kinds of exercises they would be expected to oversee and where the individual members brushed up on their basic military skills and did the necessary MOS conversion training. During the year, too, MTC members made a number of liaison trips

throughout Readiness Region VI to advertise their services to the National Guard and Army Reserve units in the region.

By 1974, the unit was fully operational and by the end of the year had conducted two FTXs, four CPXs, 11 ATTs, and three map maneuvers. During 1974, too, plans were laid for a reorganization — the first of many. As a result, branch material teams were set up to conduct the various exercises. (Subsequent reorganizations were based on the troop unit den-

sity of the Reserve Component units in the Region.) The final MTC configuration showed 17 functional teams, with all of the Army's branches except Military Intelligence being represented. The teams were similar in organization, having a lieutenant colonel as the team leader, a major as chief controller, a major as operations officer, captains as the administrative officer, the intelligence officer, and the logistics officer, and two NCOs — operations and intelligence.

The MTC, while a part of a training division, receives only administrative and logistic support from its parent organization. It is under the operational control of the Readiness Region. Requests for assistance are channeled through either the State Adjutants General or an Army Reserve command (ARCOM) to the Readiness Region. Informal coordination is encouraged. The decision to accept a mission is made in the MTCs with the approved request being sent to one of three groups — Combat, Combat Support, or Combat Service Support — and from there being assigned to one of the functional teams. The team assigned the mission does all of the planning and preparation for the mission. If more people are needed to conduct the actual exercise, they can usually be drawn from the other teams.

In the actual conduct of an exercise, the team functions as the next higher headquarters. It can also act as subordinate units if none are available. Accordingly, for a battalion exercise, the team begins planning a brigade level operation. The decision as to the general sequence of events is the responsibility of the operations officer.

Once the basic exercise is blocked out, the detailed sequence of events is developed, along with anticipated responses. Radio traffic from the companies is generated and the entire problem is looked at from start to finish. In addition, prepared messages relating to supply and administrative functions are included, with each being designed to force some action from someone. Once all this is completed, the final copies are printed.

A final planning conference is then held at which time a floor plan and a

communication plan are provided to the unit that will undertake the exercise. This allows the unit to see that its key personnel are advised on what has to be done before the team arrives at the unit's location. Immediately following the exercise, a critique is held; within weeks, a formal report is provided.

As the 100th MTC's proficiency in conducting exercises has increased, so has its workload. In late 1975, it began conducting multiple-unit exercises and also began work on developing a computer-assisted map maneuver for the Reserve Components. Although costly, this system is much more efficient than a manual map maneuver.

For battalion-level exercises in the field, the MTC has found that additional personnel are needed to serve as umpires and controllers. The main addition is the OPFOR controller, who works under the supervision of the intelligence controller. Additional umpires and evaluators are used at company level as they are needed.

The 100th MTC has conducted exercises for a variety of units at all levels. An exercise conducted for Company F, 425th Infantry (Ranger), for example, was the first of its type and was a corps-level intelligence problem. It has also conducted a series of exercises for a COSCOM rear area operations center and several subordinate units. Its infantry team conducted the first 4.2-inch mortar platoon ATT that used a flash base team for scoring the results. The nature of the exercises that it conducts varies with the type of units that it works with in the Readiness Region.

In the event of mobilization, the MTC will report to its designated mobilization site and will conduct ARTEPs for the Army Reserve and National Guard units that would be mobilized and deployed. Its present mobilization site is Camp Shelby, Mississippi. It would be assisted by an Army Reserve garrison unit that would provide the needed overhead to run the post while the MTC conducted its training exercises.

In the six years that I have been with this MTC I have learned many individual lessons, but I think the most important lesson and one that we learned the hard way as a group was that there is a right

way and a wrong way to critique a unit. On many of our early exercises, we simply read off a long list of what was wrong with the unit and left. In some cases, we said the unit had performed in a satisfactory manner and then, after we had left, sent a letter detailing all the things we had found wrong. This did not sit well with the unit commanders.

I have found that the best way to critique a unit is to find at least two things the unit did that were outstanding. One of those items should be used to begin the critique. Then, after detailing the faults and what can be done to correct those faults, the second outstanding item can be used to end the critique. It is also advisable to recognize at least one outstanding private or junior enlisted man.

I think the key to success in training a Reserve Component unit is to insure that the junior officers see to it that the enlisted personnel are trained properly. The noncommissioned officer, who usually has many years of service, is the person who must train the junior enlisted personnel.

The Maneuver Training Command concept has done wonders in improving the readiness of the Army's Reserve Components because it provides the commander with a diagnostic aid to determine his specific needs. It also allows him to concentrate on unit training up until the final moments before an exercise begins. As the battle is the payoff in war, the ARTEP is the peacetime payoff.

MAJOR WILLIAM L. HOWARD is the OPFOR/Intelligence Officer of the Combat Support Division, 100th Maneuver Training Command. He is a 1964 graduate of the ROTC program at The Citadel and served on active duty in Vietnam, France, and the United States from 1964 to 1968. After serving with various Army Reserve units, in 1973 he joined the 100th MTC. He graduated from the Armor Officer Advanced Course in 1979 and completed the Command and General Staff College course in the same year.

What's Your Drift?

SERGEANT FIRST CLASS WILLIE G. WELLS

"What's the drift you're using for this mission?"

"Drift? No, man, we took that out of the aiming circle."

This is the kind of dialogue that would probably go on between an Infantry Mortar Platoon Course (IMPC) graduate and his 4.2-inch FDC computer, because most 4.2-inch mortar platoons have been compensating for drift by taking it out of the aiming circle. In other words, they determine the drift to the registration point (RP), subtract it from the direction of fire (DOF), and that becomes the mounting azimuth.

This procedure, I'm sorry to say, is old, out-dated, defunct, a no-go; in short, it is wrong.

Let me back up and give you a little background on this problem.

First of all, what is drift? Field Manual 23-91 says that "Drift is the characteristic curvature to the right of the trajectory of any (right) spin-stabilized projectile." It also says that "the amount a projectile has curved away from the direction along which it was fired at any given range can be expressed in mils. This mil value is found on the ballistic plate of the graphical firing fan (GFF) or in the tabular firing tables." Finally, the manual says, "For the 4.2-inch mortar, the mounting azimuth is to the left of the direction of fire by the amount of drift at the gun-RP range. Compute by subtracting the drift from the direction of fire."

Sounds easy enough, right? But it really isn't, and there are several disadvantages with this so-called "simple" procedure.

- The drift marks on the ballistic plate must be renumbered. This continual re-

numbering and erasing causes wear and tear on the plate, and eventually causes the printed drift marks on the ballistic plate to disappear.

- Some platoons use a standard 40 mils of drift when firing elevation 0900. Not only does this reduce accuracy, it cannot be used with the new 4.2-inch mortar ammunition (M329A1E1), which has a maximum drift of only 23 mils.

- When drift is computed for firing rounds without extension, most computers lack the knowledge of how to update the ballistic plate so that they can fire with extension.

- Drift is not computed when firing an illumination round, because of the large area that must be illuminated. When drift is taken out of the direction of fire, it is then determined by using HE data. Therefore, when an illumination round is fired, it contains the drift correction that is usually applied to HE rounds.

- During an emergency mission, the renumbering process slows down the mounting of the platoon. The aiming circle operator also has to wait for the fire direction center (FDC) to determine the drift and to subtract it from the DOF. This procedure gets even more complicated when the M16 plotting board is used for computing fires for the 4.2-inch mortar, because the computer must determine his DOF, round it off to the nearest 50 mils, and then subtract the drift.

- New developments are causing the greatest problems with the old procedure for computing drift. For example, the new 4.2-inch smoke round that is being developed is not ballistically matched with the HE rounds. Accordingly, the

computer will have to adjust the drift for different rounds on the same ballistic plate. Too, the Mortar Ballistic Computer (MBC), which was called the Mortar Fire Control Calculator (MFCC), applies drift to each deflection as chart and subsequent command data is determined. The same is true of the TI-59 hand-held programmable calculator (HHPC), which many units have purchased from Texas Instruments. The TI-59 also applies drift to each deflection to determine firing data.

NEW METHOD

A new method for applying drift will be in the new FM 23-91, which is in draft form. Drift is no longer taken out of the direction of fire (DOF). When the DOF has been determined, that also becomes the mounting azimuth.

Drift itself is now determined from the first round that is plotted. For example, let's say the DOF to the RP is 3842 mils. The mounting azimuth would also be 3842 mils. The drift for this mission is then determined to be 39 mils. This figure is then applied to the initial chart deflection of 2800 mils, which means a command deflection of 2839 mils. This drift correction is the drift for the mission and is applied to the initial and all subsequent chart deflections. Throughout the mission, therefore, the drift is treated as a deflection correction, and the correction for drift will always be a left correction to compensate for the round's drift to the right. This procedure is used with both the observed and the modified observed charts.

Although applying drift on a surveyed

chart follows the same basic steps, there are a few salient points I would like to mention.

First, the procedure for determining and applying drift is the same as explained above until the registration is complete. At that time, the computer will update his firing chart using the three steps after registration:

- Move plotting pin back to the surveyed RP.
- Draw an adjusted charge gage line to read the final chart charge.
- Determine deflection correction using the deflection correction formula.

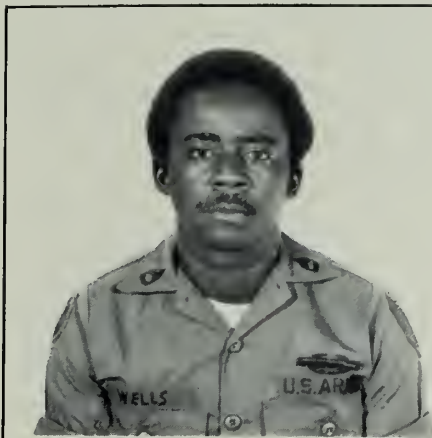
The deflection correction is recorded on the cursor above the adjusted charge gage line, and the computer will apply this correction and the drift (as read from the adjusted charge gage line) to the chart deflections of all targets within the transfer limits of the RP. To simplify procedures, the deflection correction and the drift are usually combined to form a total deflection correction at the begin-

ning of each mission.

The Mortar Division of the Weapons, Gunnery and Maintenance Department doesn't like to make changes any more than anyone else. We gave this one a great deal of thought and we know that it will work well in the field. We are constantly striving to develop new techniques, ideas, and procedures that will help make our mortars more responsive

to the needs of the maneuver commander.

Any questions or comments should be directed in writing to: Director, Weapons, Gunnery, and Maintenance Department, ATTN: Chief, Mortar Division, U.S. Army Infantry School, Fort Benning, Georgia 31905. Or the Department can be reached at AUTOVON 784-2513.



SERGEANT FIRST CLASS WILLIE G. WELLS was a senior instructor in fire direction procedures with the Mortar Division of the Weapons, Gunnery, and Maintenance Department of the Infantry School. He previously served as both a mortar platoon sergeant and as a mortar platoon leader. He is now on his way to Germany where he will be assigned to the 2d Battalion, 28th Infantry. He first enlisted in the Army in March 1970.

Vehicle Identification

**NORMAN D. SMITH
GEORGE M. GIVIDEN**

Throughout the history of warfare, members of the armed forces have had to learn how to tell the difference between friendly and enemy equipment. At first this responsibility fell mostly on scout and reconnaissance units. Then as armies became more mobile and nations formed alliances, more and more units had to learn this job. Today our soldiers have about as many friends as they have potential enemies — and both groups have a lot of different vehicles.

The problem then is twofold — first the soldiers must learn to recognize a vehicle as friend or foe, then they must be able to identify the specific vehicle.

Over the years the Army has come up with a variety of methods for teaching vehicle recognition and identification (R and I). The general approach has been to teach soldiers to recognize and identify vehicles from photographs taken at close combat ranges or from highly detailed drawings. The photographs are usually in

black and white, the vehicles are rarely shown in realistic tactical settings, and usually only Threat vehicles are shown.

While most of these approaches have something to recommend them, they also share several weaknesses: Few of them present the vehicles at realistic field ranges and in realistic settings; they have no standardized method of presentation; they require extensive support in the form of training areas or equipment; and they have no built-in way of measuring

the level of skill, which is important in establishing the amount of retraining that might be needed.

To overcome these weaknesses, the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) and its contractor Human Resources Research Office (HumRRO) have developed a long-range target identification training program called "Combat Vehicle Identification" (CVI).

The objectives of the CVI training program are to produce the most motivation and learning in the shortest training time; to keep training simple with a minimum of support materials; to standardize training in the Army for friend and foe recognition; to train soldiers to recognize the cues that are important at ranges that are realistic for vehicle identification; and to provide a continuing method for evaluating recognition skills.

The basic CVI training program, now in its final testing stages, consists of slides and printed materials divided into six training modules and an overall test module. Each of the first five training modules covers five vehicles, and each vehicle is photographed from front, side, or oblique views. Further, each module is divided into a manual presentation phase, an automated phase, and a test phase.

In the manual presentation phase, slides of the vehicles are projected one at a time onto a screen, and the images are adjusted so that the size of the vehicles is representative of what the soldiers would see at realistic combat ranges. The soldiers write their R and I responses, after which the instructor enumerates the key cues that are relevant in recognizing and identifying a particular vehicle. Then the soldiers are given a chance to ask questions.

During the automated phase, each slide is shown for 15 seconds. The soldiers write their responses, and the instructor repeats the key R and I cues. This time, though, he permits no questioning.

In the test phase, two views for each of the five vehicles covered in the module are presented with each slide appearing for eight seconds. Again, the soldiers must write their responses.

The sixth training module presents no new vehicles, but uses five that appear to

be especially difficult to learn because they are quite similar. These are presented in the same training format that is used for the first five modules.

The final test module is made up of two views of each of the 25 vehicles using eight-second exposures and written responses.

The instructional materials consist of a guide to the program, which gives detailed instructions for all phases of the training, and, for each of the six training modules, a complete script for the instructor, plus general presentation reminders. This reduces the instructor's preparation time to almost zero.

But what does the trainee see in the CVI program that is different from the usual slide presentation? The answer is the key to the program. He sees an image of a vehicle on the screen that resembles both in size and in identifiable characteristics the image he would actually see if he were in the field looking at the vehicle itself. Furthermore, the simulation of power optics is a regular part of the training. Thus, the program can be used to train a TOW gunner using 13-power optics at a range of 3,000 meters and also an infantryman without power optics at 500 meters — simultaneously, if desired.

Throughout the CVI program, the soldier is a participant. He must show by responding on the work sheets provided that he recognizes a vehicle as friendly or enemy, and that he can correctly identify the vehicle. Recognition and identification are thus combined into one training program in such a way that a soldier's progress on both can be measured and tracked.

To assure that the program really teaches a soldier to differentiate between the vehicles by their characteristics rather than by the terrain features that appear with them on the photographs, the same background is used for all the vehicles. For the slides, HO scale models of the 25 vehicles were photographed against an identical location on a realistic terrain board. (Only 25 vehicles are used in the program because they are the only ones available in the scale models. As additional vehicles are developed and the models become available, others will be added.)

An *advanced* CVI training program, now being developed, will add a number of vehicles to the array in the basic program, and also will include vehicles that are photographed under a variety of field conditions (such as masking smoke or vegetation) that reduce visibility and in a variety of vehicle positions (such as hull defilade).

The CVI training program continues to receive favorable comment from the commanders in the field who are using it. Twenty-two units from FORSCOM, TRADOC, USAREUR, the Marine Corps, the Air Force, and the Army Reserve and Army National Guard are now using the program and participating in the evaluation of it.

When the evaluation is completed, revisions will be made to improve both the current basic program and the developmental advanced program. ARI is scheduled to release this improved program to TRADOC early in Fiscal Year 1981 for final evaluation, publication, and use throughout the Army.

We are sure that this new program will help our soldiers on any future battlefield to know who their enemies are — and also who their friends are.

NORMAN D. SMITH holds a PhD from Oklahoma State University, and presently serves as a research psychologist with the Army Research Institute's field unit at Fort Hood. He served on active duty in the early 1950s, and before his present assignment he was the Chief, Field Unit, American Institute for Research, East Asia.

GEORGE M. GIVIDEN has an MA degree from Vanderbilt University and is the Chief of the Army Research Institute's field unit at Fort Hood. He was an infantry platoon leader and company commander in the early 1950s and was an instructor at the United States Military Academy between 1957 and 1960. He is a 1951 graduate of the Military Academy, and has previously worked with the Stanford Research Institute and the Litton Applied Technology Laboratory.

SWAT

BILLY A. ARTHUR

MAGLAD, MILES, WEAPONER, LASERTRAIN, and now SWAT — all are acronyms for new training devices that have been or are being developed for use in the Army's marksmanship program.

The Squad Weapon Analytical Trainer (SWAT), which was recently tested by the U.S. Army Infantry Board, can be used to train five firers at one time under simulated battlefield conditions in a classroom or aboard ship. Each firer's performance can be analyzed in real time and immediate results can be given to both the firer and the instructor (see Figure 1).

The system uses two motion picture projectors. While one projects a visual battlefield scene, the other projects an invisible infrared image over the randomly appearing and disappearing targets at which the IR detector on the firer's weapon must point if he is to score a hit. Lead for moving targets is programmed into the infrared projector. When a firer fires his weapon, he hears a simulated bang and feels a recoil, which is caused by a short pulse of air released near the front sight (see Figure 2). A microcomputer determines where his round would have hit and supplies this information to both a computer-generated voice unit and a cathode-ray tube display at the instructor's station. The computer voice unit serves both the firer's and the instructor's headsets.

When a target appears on the screen, the IR projector gives a target-present signal, and this starts a clock in the mi-

crocomputer to measure the firer's reaction. The target-present signal is also used to determine the number of targets that appeared, were ignored, or shot it, and the number of shots fired when no target was present. The firer's results are continuously displayed in separate columns on a display on the instructor console. At the completion of the exercise, the results, the analyses, and the response times are printed by a terminal at the instructor's station.

Distribution of fire can be monitored using a gallium arsenide infrared source that is located in the flash-hider part of the rifle. Although the projected IR laser spot is invisible to the firer, it is detected by an infrared television camera and fed into a display located at the instructor's console. When a rifle is fired, the IR projector illuminates the screen with a

small IR aiming spot. If an instructor wants to continuously monitor a firer's rifle motion, he can leave the IR aiming spot on throughout the firing. The camera data can also be recorded for playback during debriefings, which is a valuable diagnostic tool.

The SWAT was tested by the Infantry Board to assess its potential value for use in the Army's M16A1 rifle marksmanship training program.

The SWAT was set up for the test in a 50-man classroom at Fort Benning, and a new defensive test range was used for all of the live fire training and firing. The range is similar to TRAINFIRE, but it includes seven moving targets in each lane.

The soldiers for the test, drawn from 3d Battalion, 7th Infantry, 197th Infantry Brigade, were assigned randomly to

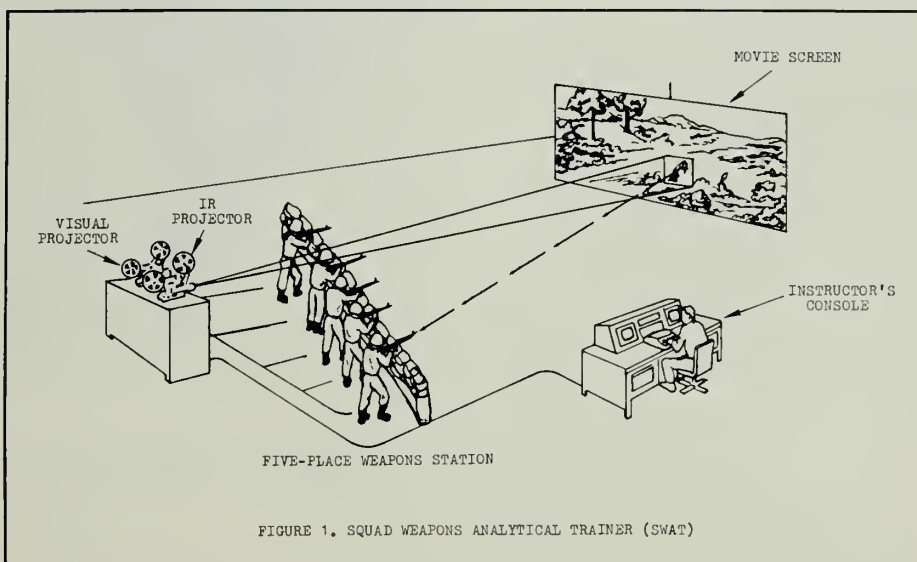
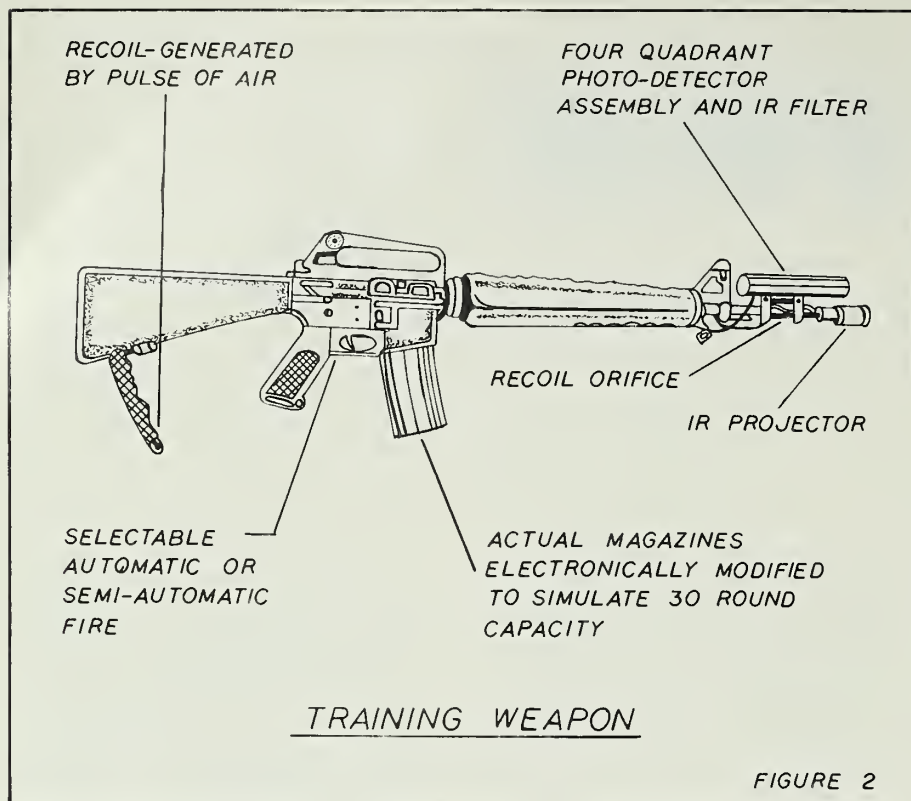


FIGURE 1. SQUAD WEAPONS ANALYTICAL TRAINER (SWAT)



three groups. One group was trained on the SWAT by Infantry School instructors, one was trained only with live ammunition, and the third received no training at all. All groups fired alternately on the SWAT and on the new test range, and their scores were compared. At the same time, the test directors maintained a complete log of all hardware incidents and recorded their own observations as well as those of the test soldiers during all of the training and firing exercises.

Overall, the test results gave some evidence that the SWAT does have potential for training transfer, but because a SWAT training program was not fully developed, a final estimate of its value could not be made. The data gained from the Board's test could be used to further develop a program for SWAT and to decide where it fits into the Army's marksmanship program, if it does at all.

With the cost of one M16 round pegged at 19 cents about a year ago by the National Inventory Control Point, the need to evaluate the effectiveness of

training devices that do not shoot real bullets is obvious.

The high costs of these devices, though — approximately \$250,000 for the SWAT test system and \$39,000 each for the 24 WEAPONEERS already bought by the Army — must be evaluated in light of their training effectiveness.



BILLY A. ARTHUR, a retired Army officer, graduated from the United States Military Academy in 1955. He presently serves as editor at the Infantry Board at Fort Benning. He holds a master's degree in English literature from Columbia University and has numerous published works to his credit. While on active duty, he served in a number of staff and command assignments, and was with the Infantry Board between 1971 and 1973 as division chief and as executive officer.

And the training effectiveness of these devices is not easy to evaluate. Motivation, attitudes, and human errors can confound the data while measures of training effectiveness can be difficult to define.

Unfortunately, it seems that devices are sometimes developed without a clearly defined requirement or a planned use for them. This problem may then be compounded when a developer produces better devices than were expected. This means that the more advanced they are, the less well they are understood, and the farther behind doctrine, training, and testing techniques lag. In addition, certain characteristics of small arms training devices, such as sound and recoil, have proved most difficult to isolate and evaluate. Realistic moving targets and battlefield scenes can be presented on film, but, then, just how effective is training in a darkened classroom?

On the other hand, actual live firing seems to have a training value all its own. Devices such as the SWAT may well prove effective as diagnostic devices, and for refresher and even advanced marksmanship training, including moving targets and fire distribution. But it appears that the Army's basic marksmanship qualification program should stick to live fire for some time to come.

MORTAR PLATOON WIRE NET

MASTER SERGEANT ARNOLD T. BLOODWORTH

The November-December 1979 issue of *INFANTRY* printed an article, "Mortar Unit Wire Net," which was written by Captain George L. Humphries. I would like to offer as an alternative to Captain Humphries' proposed wire net a method that I think is faster and more reliable.

I carried an 11C MOS from 1960 to 1977. During those years I experienced many times the frustrations of poor communications within mortar platoons. Eventually, the mortar platoons of the 2d Battalion, 36th Infantry, developed a communication system that earned for them several distinguished ratings.

All of the needed equipment was obtained within the battalion's area, with the exception of the alligator clips. These were purchased locally and were inexpensive. A speaker suitable for field or back-pack use and an MX155 with line jacks were obtained from the battalion's communication personnel. The RL39 and DR8 with wire were also available in the battalion. A steel plate (obtained from the battalion's welder) measuring approximately six inches by eight inches by one-sixteenth inch was then welded to the wire handle of the RL39 (see Figure 1). A small lip on the steel plate was bent to fit into the strap holder located on the rear of the M106/M125 below the bracket provided for the wooden handle of the RL39. (When this plate is welded correctly and placed in the bracket, it allows the reel to spin freely when laying or recovering wire. It also allows the operator to reel in the wire without re-

moving the reel from the track. The reel is secured with a GP strap during movement.) A line jack was then attached to the running end of the wire and secured with electrical tape. A snap link, attached to the wire about one meter from its end, secured the wire to the FDC track and kept it from being pulled from the MX155.

The MX155 was mounted on the rear of the FDC track with wire attached to its outside and inside terminals. The telephone in the FDC could then be hooked up and not moved during the entire operation. A short length of wire was then hooked to the intercom system in the mortar track, and one end, with the alligator clips attached, was located near the reel of wire.

If reciprocal lay was done by wire, an additional DR8 with a line jack was laid from the aiming circle and plugged into the MX155. A TA312 telephone with headset 182/PT, located at the aiming circle, allowed the operator to work the aiming circle with both hands and to talk to the FDC and all of the guns at the same time.

The system works as follows:

As soon as the FDC stops in position and the gun track also stops, the designated person in the gun track takes the GP strap from the reel, takes the end of the wire and runs to the FDC, hooks the snap link in position, plugs the line jack into the receptacle corresponding to the number of his gun, and returns to his squad.

When the person designated on the

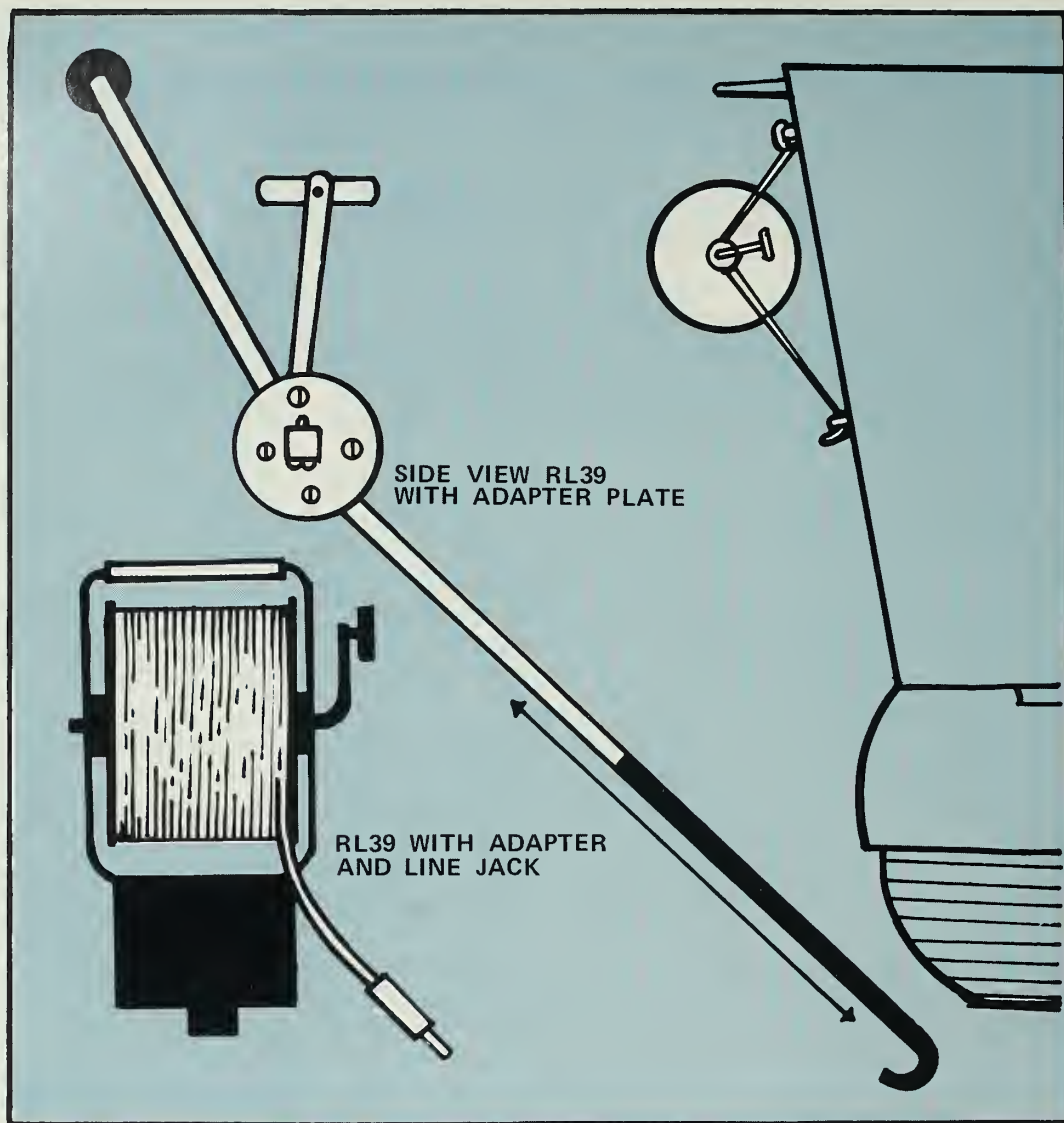
gun track sees that the wire has been secured, he simply hooks the two alligator clips to the terminals on the DR8. Communication has thus been established using the telephone in the FDC and the intercom system on the gun track. This procedure can establish communications within an entire platoon in one minute or less with only a little training and at almost no cost to the government. When it is desired, the squad leader can remove the spaghetti cord from the control box and hook the speaker and handset to the control box. This allows all members of the squad to hear the commands, possibly eliminating some of the mistakes and a lot of the frustration that can be caused by poor communications.

When the section displaces, the wire net can be broken down quickly and easily. On the command to displace, the FDC RTO unplugs the line jacks from the MX155 and unhooks all snap links. The designated person on the gun track unhooks the alligator clips from the DR8, reels the wire in, and secures the wire and reel with the GP strap. Again, all of this should take less than one minute.

If an alternate vehicle must be used, it is a simple matter to move the MX155 and telephone from the FDC to the other vehicle and to use the same procedures.

This system has certain definite advantages:

- Wire from individual tracks can be laid in the length of time it takes the runner to run from the gun track to the FDC. This is accomplished quickly since the reel spins freely as the wire is pulled.



- The runner is not slowed by having to carry a cumbersome roll of wire.

- He can reel in the wire by simply turning the handle on the RL39.

- Telephones can be used for back-up.

- With the speaker, all of the platoon's members can hear the commands.

- The volume of the speaker can be turned up or down, using the control knob on the control box.

- Unlike the hot loop, when one wire is out the others will work.

- Wire can be used indefinitely since it is never cut or stripped.

- Using speakers, the FDC RTO does not have to ring the guns.

- The reel does not have to be moved during the entire operation.

- It is not necessary for a quartermaster to lay wire.

- It does not require extra batteries, as do the TA312 and the AN/GRA-39.

Of course, there are some disadvantages:

- The intercom system must be working properly. For those not working, the wire from the intercom should be unhooked and it should then be hooked to the telephone.

- Since more than one wire is laid, it is necessary to insure that vehicles do not travel between the guns and the FDC, or between the guns and the aiming circle. (Watch out for the forward observer's and the platoon leader's drivers. They like to cluster around the FDC.)

- Sometimes the wire gets tangled during laying. It helps to have someone keep a little pressure on the reel while it is spinning.

- You may have to occasionally un-

tangle the snap link from nearby bushes.

Without the yelling and bickering between squads and other members of the platoon, the unit becomes better organized and more effective, and the time saved can be used to deliver more and better fire support.

ARNOLD T. BLOODWORTH retired from the Army in January 1980 after 20 years of active service. He served with mortar units in the United States and in Alaska, Vietnam, and Europe. His last assignment was with the ROTC Instructor Group at Michigan State University.



NONCOMMISSIONED OFFICER (Infantry School Quarterly, January 1958)

This is an age of scientific advancement which progresses at such a dizzying pace that it might be called, "The era of seven-league boots." Ideas located on the far horizon today are accomplishments tomorrow and are relegated to history the day beyond tomorrow. Progress is made by leaps and bounds rather than by cautious, calculated steps. All about us there are changes — changes in environment, in people, in commodities, in ideologies and in weapons for war.

Such an era brings to mind a time-honored French maxim, "The more things change, the more they remain the same." This statement seems incongruous, but if we pause to study it we find that it contains a basic truth. Some things, even in this period of unprecedented technological developments, do not change. One of these is the requirement for competent leadership.

Strong leadership, most certainly, is needed today. It is needed in the Army. And the need is not limited to any particular echelon, nor is it confined to commissioned officers. Qualified and efficient noncommissioned leaders are needed as well — now, as in the past. This requirement has not changed.

The noncommissioned officer always has been held in high esteem by our combat commanders and by battle experienced career soldiers. His importance is recognized by such men. Yet, there seems to be a growing tendency to under-estimate the value of noncommissioned leadership which will damage irreparably the Noncommissioned Officer Corps unless we who wear the stripes close ranks and knuckle down to the tasks created by this mighty age of advancement.

Manifold changes do not diminish the need for, but they do place new requirements upon, the noncommissioned officer. As concepts change the employment of forces changes. Habitual practices become obsolete and new ones must be assimilated and made routine in the performance of duty. The astute noncommissioned leader adapts himself to these changes and measures up to his many responsibilities.

The rank and title of the noncommissioned officer are consonant with dignity, honor and service. Dignity demands respect. When rank and title are worn with dignity, the respect of

superiors and subordinates becomes the reward. Honor is loyalty, honesty, integrity, faithfulness, trustworthiness—all these and more. Service with honor is a tradition of the Noncommissioned Officer Corps.

The major attribute of the noncommissioned officer must be his ability to lead men. We hear the contention that leaders are born — not made. This contention is faulty! Leaders are developed! They are guided by other leaders; but they are made — largely self-made. A man cannot lead without determination, without the will and the desire to lead. He cannot do it without studying, reading, observing, learning. He must apply himself to gain the goal — to develop the talent for military leadership.

Initiative is the first step toward leadership. Aggressiveness is the second. Study is another.

The talent and will to read and study must be kept awake and exploited, for there is no better way to remain abreast of the tremendous changes taking place today in concepts, doctrine and techniques. To be informed is one of our great responsibilities as professional men — as noncommissioned leaders.

Every moment must be gainfully employed in the best interests of the service. This time is ours, but what we do with it directly affects our reputation, and not a moment should be allowed to undermine or besmear the good name of the Noncommissioned Officer Corps. We must be, at all times, the epitome of the American leader. We must confine ourselves to those activities which enhance the position of the noncommissioned officer. Friends and acquaintances must be persons of the highest repute, in good community standing, and we must be moderate men in all things save leadership. In leadership we must go all out. We must strive for perfection though it is a goal we may never quite achieve. Our appearance, behavior, bearing and poise must be that of the responsible, the professional noncommissioned officer.

None of these things are new ideas. Nothing said here changes, in any way, previously established standards or requirements. You see, "the more things change, the more they remain the same!"

ENLISTED CAREER NOTES



WHY DIDN'T I GET PROMOTED?

EDITOR'S NOTE: The question of why one person is promoted while another is not is a difficult one. The following excerpts from the MILPERCEN publication, FOCUS, may help to answer it. The first is from a letter from Sergeant Major of the Army William A. Connelly, and the second is from an article by BG Richard A. Scholtes, who was president of the latest E7 promotion board.

FELLOW NONCOMMISSIONED OFFICERS: Promotion is the single most important aspect of military life. With promotion comes greater responsibility, authority, prestige, and material advantages, such as money.

No one who is up for selection by a centralized promotion board can expect or even hope to remain competitive if his records are not up to date — it is the responsibility of the individual NCOs who are in the zones of consideration to purge their records and insert pertinent material that has not been placed there before for whatever reason.

The SEER is the most important document in a soldier's OMPF that is seen by the centralized board members. If the SEER is not filled out correctly, it hurts the soldier's or NCO's chances of getting promoted. The margin between qualified NCOs sometimes hinges on a single piece of paper, or a comment that appears on one SEER rather than on the other. The competition within the Army is very keen today, and NCOs must put forth that extra individual effort to improve their job performance and their records.

It is your military career; what you get out of it depends, to a large extent, on how much you put into it, including reviewing and maintaining your

OMPF. I recommend you review your OMPF and do whatever is required to bring it up to date now, and then keep it that way.

WILLIAM A. CONNELLY

A Look At The Latest E7 Board

The latest E7 promotion list has been published, and now the questions start. E6s from almost every unit are asking the question, "Why wasn't I promoted?"

As President of the 1980 E7 Promotion Selection Board, I wish each of these questions could be answered personally. Obviously they cannot. However, I can tell you that every record of every eligible NCO was closely evaluated by the members of the board.

In this evaluation, the board did not concentrate on any single part of an NCO's record. We reviewed every aspect of the NCO, and our final evaluation was based on the "whole person" concept. Our purpose was to select those NCOs who were *best qualified* for promotion by having proven, through demonstrated performance that they possess personal characteristics and potential that have obviously placed them ahead of their contemporaries in their particular Career Management Field (CMF). I emphasize "in their CMF" because some NCOs, as well as commanders, do not understand that the competition is only within the NCO's CMF. It is also important to realize that the selection rate within each CMF may vary considerably, based on the needs of the service or the composition of the NCOs within a particular CMF.

Undoubtedly, the toughest part of a promotion board's job is to determine who within each CMF is best qual-

ified. Within each CMF there are numerous highly qualified NCOs, and the board had the difficult task of determining which of these were, in fact, the best qualified. It was not an easy job, but I can assure everyone that our board approached it in a most responsible way.

One thing the board noticed during its review was that many of our NCOs, to include some who may be classified as highly qualified or even best qualified, are doing some careless things that could have an impact on selection.

First and foremost among the things that cause nonselection for promotion is poor performance of duty. The majority of those not selected for promotion by our board had failed to perform their assigned duties to the proper standards. I am talking about mediocre performances — NCOs who failed to appreciate responsibilities, and NCOs who have shown a lack of personal discipline. These things automatically denied selection.

The board insured that those who did not meet the criteria were not promoted and that substandard performers were recommended for the Qualitative Management Program. However, the board's main concern was for the many NCOs who were competitive and who had worked hard, but who, in some isolated cases, may not have been selected because they also had done some of those careless things.

Many NCOs obviously do not appreciate the fact that their Department of the Army record represents them. It is their personal record, and it is their responsibility to make certain that it is correct and current. As board members evaluated the many records presented to them, it became obvious that many NCOs either do not realize their responsibility or just do not accept it. NCOs

worth their salt would not appear before a promotion board hoping that their uniforms looked good. They would check themselves out in the mirror, and probably more than once, yet some of these NCOs allow the centralized board to review their records without first checking them out themselves.

One of the first things a board member sees upon starting a records review is the NCO's official photograph. This helps emphasize to the board member that the file on the viewing screen represents a real soldier — a career NCO. However, a considerable number of records contained no photograph at all, or had one that was four to five years old. This communicates one of several things to the board member. Either the NCO had a photograph taken and it never reached his DA records, or the NCO did not care enough to have a photo taken, or the NCO elected not to have a photo taken because his appearance — poor physical condition, length of hair, overweight, sloppy uniform — would create a negative impression and probably reduce his chances for selection. None of these are adequate explanations.

The board repeatedly saw records that did not contain orders awarding badges and decorations. It also found indications that a career NCO had obviously received some form of recognition for military or civilian course completions, unit citations, certificates of appreciation, and so on, over the years, but in many cases there was not a single document in his OMPF to reflect such recognition. The NCO had either failed to send copies of such documents to DA for inclusion in his file, or he did not realize their importance.

Some NCOs who were at one time overweight based on AR 600-9, and had subsequently lost weight and were within the standards, still had their old weight posted on their Form 2-1 (Personnel Qualification Record). Frequently these same NCOs had signed the form acknowledging that they had reviewed their records, but failed to insure that corrections were made.

I acknowledge spending a great deal

of time emphasizing some things that may appear insignificant for promotion. They are insignificant when weighed against those items in the record that get the real attention of the board.

Under the "whole person" evaluation, the SEER is unquestionably the most significant determinant for promotion. It is unfortunate that too many leaders and supervisors apparently fail to appreciate the significance of the SEER, as evidenced by how poorly some of them are completed. However, it is the SEER, coupled with the MOS Test and SQT results, that carries the real weight in deciding which NCOs are best qualified for promotion.

Naturally, the NCO's disciplinary record is considered in this determination. It is important that every NCO, as well as every commander and supervisor, understand this.

It is also important that all of our NCOs appreciate that they owe it to themselves and the Army to have as many positive factors as possible going for them when their records are submitted to a promotion board. The items mentioned and classified as careless will not in themselves stop an NCO's promotion, but they can exert a negative influence.

PROMOTION POINTS

Soldiers in the ranks of PV1 through SGT/SP5 can now earn promotion points for completing Army correspondence courses — even in their primary MOSs. They can earn one promotion point for every five credit hours completed.

A wide variety of courses have been developed by 20 Department of Defense and TRADOC schools. All courses are accredited by the National Home Study Council and offered through the Army Institute for Professional Development at Fort Eustis, Virginia.

Soldiers may take the courses individually or in groups. The supervised on-the-job program also may be available to squads or teams.

The Army Correspondence Course Catalogues (DA Pamphlet 351-20) are

available at local education centers. The application for enrollment (DA Form 145) must be completed and mailed to The Army Institute for Professional Development, U.S. Army Training Support Center, Newport News, VA 23628.

Anyone who would like further information may write to the above address or call AUTOVON 927-3085.

DRILL SERGEANT DUTY

Infantry drill sergeants belong to a select group of noncommissioned officers who are responsible for developing the discipline, motivation, morale, *esprit de corps*, and professionalism of Army trainees. They teach the trainees the skills they need to become valuable members of today's Army. To these new soldiers, the drill sergeants are the primary representatives of the Army during the formative weeks of their training. It is therefore essential that only the best qualified professional soldiers be assigned to these duties.

Drill sergeant duty is considered part of any NCO's normal career development. Qualified soldiers are nominated by their branches for drill sergeant duty on the basis of their records, or they may volunteer.

Soldiers who are involuntarily selected by MILPERCEN for drill sergeant training and duty must be in the ranks of SSG or PSG/SFC/SP7. Selections are made on the basis of the individual qualifications of the applicants and their demonstrated potential to handle positions of increased responsibility.

These soldiers must have scored consistently in the upper half of their career management fields as demonstrated by their MOS evaluation results and their enlisted evaluation reports. Other factors considered are physical fitness, education, previous positions, demonstrated leadership ability, and other criteria established by paragraph 11-65, AR 614-200. Once selected, these soldiers, as in any DA-directed assignment, do not have the option to decline. They are expected to perform as drill sergeants in the same outstanding manner that marked

their past duty performance.

Volunteers must be serving in the ranks of SGT/SP5 through PSG/SFC/SP7. All SGTs/SP5s must meet the following additional qualifications:

- They must have a minimum of four years of service.
- They must have successfully completed PNCOC and/or BNCOC.
- They must be recommended for drill sergeant duty by a commander in the rank of lieutenant colonel.

Voluntary applications must be submitted through command channels using DA Form 4187, following procedure 3-34, DA Pamphlet 600-8, and must include the following:

- DA Form 705 (Army Physical Fitness Evaluation Score Card) showing successful completion of a basic physical fitness test (BPFT) within the past six months.
- A statement from a medical officer that the applicant does not have a history of emotional instability.
- A copy of DA Forms 2 and 2-1.

Soldiers selected for drill sergeant duty will receive two years stabilization at an Army training center with the option of requesting another year. In addition, they receive special duty assignment pay (first six months, \$50; next six months, \$75; and more than 12 months, \$100); a supplemental issue of uniforms, laundered free; and authorization to wear the distinctive drill sergeant hat and badge. The award of the badge becomes permanent after six months of successful drill sergeant duty.

A soldier who is selected for drill sergeant duty is not reclassified. He retains his PMOS and after he successfully completes the drill sergeant school, he is awarded a special qualification identifier of "X."

Normally, a soldier serves only one tour of drill sergeant duty. Sometimes, however, an outstanding NCO may be selected for a second tour in a higher rank, if he has had an intervening tour of duty in a regular unit.

A soldier may volunteer to return to

drill sergeant duty while serving in the same rank, provided he has had a minimum of 24 months in another position and completes a normal overseas tour.

There is a continuing need for highly qualified soldiers to serve in these vital duties at Army training centers, and these soldiers find the experience rewarding. They also find their chances for promotion increased; DA selection boards are instructed to regard an NCO's successful performance as a drill sergeant as a good indication of his professional potential.

More information is available from local personnel centers or from S-3 schools NCOs.

OMPF COPIES FREE

Soldiers do not have to pay for copies of their OMPFs, but officials at the Enlisted Records and Evaluation Center at Fort Harrison, Indiana, say that many of them send checks or money orders when requesting copies.

When the original records were converted from paper file to microfiche about two years ago, the Center issued a statement that a fee would be charged. This message was quickly rescinded, though, and no fee was ever imposed.

Anyone who wants a copy of his OMPF needs only to write his social security number and his signature on a standard sheet of paper and mail it to Commander, U.S. Army Enlisted Records and Evaluation Center, ATTN: PCRE-RF-I, Fort Benjamin Harrison, IN 46249.

CMF 63 REVISION

In September 1980, the system mechanic concept will be implemented through a complete revision of Career Management Field (CMF) 63 (Mechanical Maintenance). This revision calls for the deletion of four MOSs: 45P (Sheridan Turret Mechanic), 54D (Chemical Equipment

Repairer), 63C (Track Vehicle Mechanic), and 63F (Recovery Specialist).

Nine new MOSs will be established in the revisions:

- 45D (Field Artillery Turret Mechanic).
- 45T (Improved TOW Vehicle/Infantry Fighting Vehicle/Cavalry Fighting Vehicle Turret Mechanic).
- 63D (Self-Propelled Field Artillery System Mechanic).
- 63N (M60A1 Tank System Mechanic).
- 63R (M60A2 Tank System Mechanic).
- 63S (Heavy Wheel Vehicle Mechanic).
- 63T (Improved TOW Vehicle/Infantry Fighting Vehicle/Cavalry Fighting Vehicle System Mechanic).
- 63W (Wheel Vehicle Repairer).
- 63Y (Track Vehicle Mechanic).

Other changes include the elimination of Additional Skill Identifiers (ASIs) L8 (XM1 Turret Repairer) and Y2 (Ground Laser Locator Designator Repairer). ASI U6 (Field Artillery Weapons Mechanic) will be used only in towed artillery units. Soldiers assigned to self-propelled artillery units holding ASI U6 will be reclassified into MOS 45D.

About 25,000 reclassifications will have to be completed during the revision of CMF 63. Revised MOS specifications and reclassification guidance has been published in Letter of Notification E-14-12, dated 27 February 1980, and will also be included in Change 14 to AR 611-201.

Reclassification out of the newly awarded system mechanic MOS before October 1981 is discouraged except for normal career progression. Individuals who are interested in tracked vehicle maintenance and recovery skills should contact the MILPERCEN Maintenance Branch (DAPC-EPL-T), AUTOVON 221-8334/8335, for information and advice regarding reclassification into these skills.

OFFICERS CAREER NOTES



51

Officer Notes

COMMENTS FROM THE CHIEF

As 1980 comes to a close, I want to review some of my previous notes and to write about how I see things in the near future.

The Infantry officer has the challenge of providing the U.S. soldier with the best possible leadership. TRADOC schools have a series of courses to prepare leaders to meet this challenge. A new course, the Combined Arms and Services Staff School (CAS3) will start in 1981. This course will prepare captains for field grade officers' staff positions.

Infantry career managers will do everything possible to give Infantry officers schooling to develop themselves professionally. I must state, however, that schooling will be requested only to develop an officer's skills to do his job. We will school you for the good of the soldiers.

Earlier this year, I wrote about graduate school. At that time, I stated that we should get a "master's degree in soldiering" first. I still believe this, and promotion results confirm this belief. An advanced degree benefits the Army only when it's in a discipline that supports one of the officer's specialties. Infantry officers will be considered for fully funded advanced civil schooling only if they are first fully qualified as infantrymen and then only in shortage disciplines.

If an officer gets an opportunity to work toward an advanced degree that supports one of his specialties without adversely affecting his duty performance, he should go ahead and do so. Or if he does not yet have a specialty, he can work on a degree that supports an Army specialty, and it will help us to determine what his second specialty should be.

An Infantry officer might also want to consider taking the Command and General Staff course by correspondence be-

fore attending graduate school.

In any event, no officer should allow off-duty education to adversely affect his job. Selections for promotion and schooling are based on an officer's demonstrated manner of performance and his potential, not on his academic abilities.

OPMS is here to stay. In addition to being qualified in his accession specialty (SC 11), an Infantry officer must also develop skills in another specialty. As he progresses in rank, he will spend less time in an Infantry environment. About half of the time an officer serves as a major will be spent in his additional specialty. While some believe that there is no specialty combination for majors, this is not true. An officer should read DA Pamphlet 600-3, talk with other officers, think about his interests and goals, and select a specialty that he is interested in. He must be fully qualified in both specialties to be a successful Infantry officer, and once a specialty is designated for him, he should seek schooling and assignments to fully develop his potential in that specialty.

The Officer Personnel Management Directorate is currently in the process of reorganizing. On 18 August 1980, Majors Division was abolished and career managers have been reorganized by the accession specialties they handle. The Infantry Management Section now is responsible for assigning all Infantry officers from lieutenant through major in all specialties. The section also manages assignments into SC 54 jobs. In early 1981, the Infantry lieutenant colonels assignment officers will also be integrated into the Infantry Management Section.

A complete telephone list and photographs of the career managers will be published in the January-February issue of INFANTRY. Currently our telephone numbers are AUTOVON 221-0207/0208/0209 and 7823, or commercial area code 703, 325-0207/0208/

0209 and 7823.

Have a healthy, happy holiday season.

LTC Gerald K. Griffin

COMBINED ARMS AND SERVICES STAFF SCHOOL

The mission of the Combined Arms and Services Staff School (CAS3 or "cass cubed") is to provide active and reserve component officers the instruction they need to serve as staff officers with the Army in the field.

Three major functions of CAS3 are to teach what staffs are by defining and tracing the development of staffs and staff roles; to teach what staffs do by presenting instruction on common and collective staff procedures and skills; and to teach how staffs operate. The student officers will apply their acquired skills and knowledge in a variety of simulated staff situations.

The CAS3 program will include both resident and nonresident phases. All officers must participate, and those who complete the nonresident instruction package will attend the resident CAS3 course (on a TDY basis) during their seventh, eighth, or ninth years of service. The scope of the nonresident instruction package will be validated as part of the first three CAS3 resident classes. The length of the resident course is still under consideration by TRADOC.

The CAS3 program will begin in phases with the first course at Fort Leavenworth during Fiscal Year 1981. When it is fully implemented in FY 1985 approximately 3,300 active duty OPMD-managed officers and a yet-to-be-determined number of reserve component officers and officers not managed by OPMD will attend.

TRADOC is also analyzing the feasi-

bility of conducting the resident courses at other locations.

Graduates of the course may be selected to attend either the Command and General Staff College or a senior service college, or both.

Other elements of the officer education system that are being studied include the expansion of the officer basic courses and the development of military qualification standards.

LAW ENFORCEMENT (SC 31)

Law Enforcement (Specialty Code 31) encompasses positions that are concerned with the enforcement of laws and regulations essential to the preservation of order and discipline, the security of U.S. Government property, the provisions of Military Police support in combat operations, criminal investigation operations, and the discharging of correctional functions.

Although the Military Police Corps is one of the youngest branches of the Army (established on 26 September 1941), its traditions of duty and service are unsurpassed in our armed forces. Soldiers have been performing military police duties from the time of the Revolutionary War when these duties were assigned mainly to a mounted police force. Soldiers serving as the Veteran's Reserve Corps and Provost Corps performed military police duties during the Civil War. MPs also served with distinction in the Spanish-American War, World Wars I and II, the Korean conflict, and in Vietnam.

As a result of hard work and distinguished service, the Military Police Corps was designated a combat support arm and service of the Army on 14 October 1968. In the combat support role, MP units provide the commander with a force that is organized, trained, and responsive to the challenges of the modern battlefield.

The Law Enforcement Specialty offers a wide variety of staff and command positions and also advisor, recruiter, instructor, and provost marshal assignments.

Once an officer is designated SC 31, usually in his eighth year of commis-

sioned service, he will be scheduled to attend law enforcement training at Fort McClellan, Alabama. The period of training will vary, but generally it will consist of modules that will prepare him for the many types of positions available.

The professional development and assignments officers of the Law Enforcement Section, Combat Support Arms Division, will be pleased to answer any questions. They can be reached at AUTOVON 221-7761 / 7747.

SECOND SPECIALTY

All officers who are managed by OPMD will be designated another specialty before they complete eight years of service through the Eighth Year Designation Process if they have not been designated one through the Event or Permissive Designation Process. Most officers (about 90 percent) receive their other specialty through the eighth year process.

Before these designations are made, the files of all officers in a given year group are reviewed. Designations are based on:

- The Army's requirements.
- The officer's education and experience.
- The officer's demonstrated performance and potential.
- The officer's preference.

Within the next couple of months, all OPMD-managed officers in Year Group (YG) 1974 will receive, through their servicing MILPOs, Officer Specialty Preference Forms (DAPC-OPP Form 854). Each officer will use this form to indicate his four other specialty choices.

The importance of this action to an officer's career cannot be overstated. He will be developed, assigned, and selected to attend schools on the basis of this specialty. Yet in the past the return rate for these forms has been poor. Each officer in YG 1974 should give very careful consideration to selecting his other specialty. And finally, he should complete the form in accordance with the instructions provided and return it promptly to his MILPO.

FROM RCPAC

EDUCATION TIPS

Any officer who would like to obtain an information packet and enrollment application for the CGSC Correspondence Course should submit a request to USACGSC, ATTN: Registrar, ATZLSW-DECA-ET, Fort Leavenworth, KS 66027.

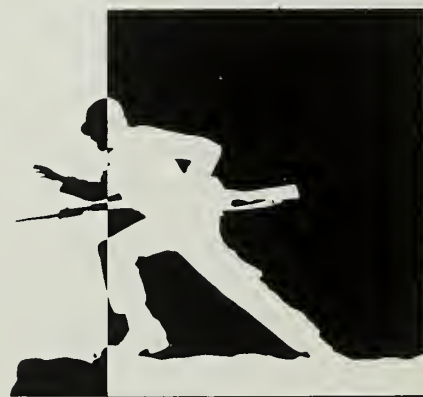
After receiving the packet, a unit member should forward his application through command channels, and an IRR officer should forward his application through his PMO.

To obtain correspondence course catalogs, an IRR officer should request the DA Pamphlet 351-20 series for his branch from ISATSC-IPD; ATTN: ATTSC-AI-PO (MAJ McGrann), Fort Eustis, VA 26304. A TPU officer should request the same pamphlet through his unit training officer.

USAR officers who are enrolled in correspondence courses can communicate with the Institute for Professional Development (IPD) at Fort Eustis by calling one of the following numbers during normal duty hours (0800-1745 EST):

	AUTOVON	COMMERCIAL
Infantry	927-4776	(804) 878-4776
Armor	927-4571	(804) 878-4571
Field Artillery	927-4575	(804) 878-4575
Air Defense	927-4571	(804) 878-4571

After duty hours, they may use the Code-a-Phone AUTOVON 927-3085 or commercial (804) 878-3085.



BOOK REVIEWS



WORLD POWER TRENDS AND U.S. FOREIGN POLICY FOR THE 1980s. By Ray S. Cline (Westview Press, 1980. 228 Pages. \$20.00). Reviewed by Dr. Joe P. Dunn, Converse College.

Ray Cline has impressive credentials. In his 30 years as a government research analyst, he has served as CIA Deputy Director for Intelligence (1962-1966) and as State Department Director of Intelligence and Research (1969-1973). Since 1974 he has taught at the Georgetown University School of Foreign Service, and he serves as Director of Studies of the University's renowned Center for Strategic and International Studies.

This is Cline's third comprehensive assessment of the contemporary world power balance as a basis for planning defense and foreign policy. His first two developed a conceptual framework that integrated geographic, economic, military and political factors into a simple formula. This latest effort refines the formula and updates the data.

In Part I, Cline introduces his concept and methodology. He divides the world into 11 zones for purposes of analysis and then develops the power relationships among the zones. Part II makes up the bulk of the work. It includes an impressive assembly of charts, graphs, and tables that detail current economic, population, political, and military data and their relationship to the formula. Part III is Cline's strategic blueprint for the 1980s. He calls for a revived alliance system of 20 key nations that would span the 11 world zones in an All-Oceans Alliance. Such an alliance, he believes, would restore to the West a dominance in sea power.

The book has some merit and interest. The vast array of data is impressive and few could disagree with the need for

stronger alliances. But the volume provides little that is new or provocative. Cline rather superficially skims over the problems and difficulties in maintaining his proposed alliance system, and the book tends toward simplistic answers throughout.

It is a book worthy of note, but it is not the last word on the subject.

THE LION'S LAST ROAR: SUEZ 1956. By Chester L. Cooper (Harper and Row, 1978. 310 Pages. \$12.95). Reviewed by Rear Admiral George L. Phillips, United States Navy, Retired.

This excellent product of Chester Cooper's pen recounts the sorry tale of a political fiasco. The Suez Canal Company, in existence for nearly a hundred years, enjoyed sovereign treaty rights ceded by Egypt, which in turn received an annual subsidy from the canal tolls. Western Europe's economy was heavily dependent on the use of the canal for its commerce and defense.

On 26 July 1956, the Egyptian leader, Nasser, seized the canal. It was an act that ended a long series of complicated political events in a world seething with unrest, agitation, and hatred, a parallel to which would be difficult to find in all of history. The Aswan Dam funding had just been wrecked by John Foster Dulles; Nasser was supporting Algeria in its rebellion against France; Russia was about to trample Hungary into the dirt; Egypt was also flirting with Communist China; Menon and Nehru in India, with their friends in Indonesia and Ceylon, were gleefully applauding the anti-Western turn of affairs; and the United Nations was bleating about "peaceful" steps.

Add to this brew another disaster — the members of the cast who were about to play out this drama were all gravely ill: Eisenhower, in declining health and in-

different to all but his re-election; Dulles, with terminal cancer; and Eden, who lived in pain through the final days of life. Dulles loathed Eden, Eden detested Dulles, while neither Eden, Mollet of France, nor Ben Gurion of Israel, trusted each other as partners in the military operation against the canal that had been proposed.

Even the planned operation was a mess, in which objectives and tactics were modified, altered, or canceled. When the combined Anglo-French force finally sortied in November 1956, it barely had time to get a toehold before a cease-fire order from the U.N. aborted the operation, which had lasted a short 40 hours. And so in a few hours it was all over and done with — the last combined effort of civilized nations to maintain treaty rights and to honor international agreements.

Cooper attributes the fiasco to Eden's loss of nerve in the face of Washington's posture of purity and its threats of reprisal. In the aftermath, the United States, to hustle its erstwhile allies out of Egypt, denied its oil to them. And although Eisenhower won his re-election, he lost some friends.

Eden deserved better than the treatment he received. As the world seethed with unrest and disorder, in the early stages of the oil shortage, Western unity was sacrificed to political expediency and Third World pressure. Eden was convinced that the U.S. was "dominated by one thought only — to harass their allies."

Cooper has written an impressive account of a milestone on history's road, which has turned bumpier and more uncertain as the years have passed, and of the time when the vacillating Western powers missed their chance to maintain stability and comity in international affairs.

THE CHANGING WORLD OF THE AMERICAN MILITARY. Edited by Franklin Margiotta (Westview Press, 1978. 488 Pages). Reviewed by Major R.J. Rinaldo, Headquarters TRADOC.

Is the military service a way of life? Is it a profession that is part of the American way of life? These questions and many others about the United States military services are posed in this volume, which records for the most part a symposium hosted by the Inter-University Seminar on Armed Forces and Society and the Air University.

This book, which is used as a textbook at the United States Military Academy, is a must for any good military library. Like its predecessor, *THE HANDBOOK OF MILITARY INSTITUTIONS*, it provides an excellent social analysis of today's military services and offers a prognosis for the future. The editor's summary, for example, is a virtual gold mine of future topics for research.

The greatest value of this book is that it points out many of the changes we only dimly perceive at the moment but changes, when they come, of the kind that may not be as quick as they may be drastic. An understanding of those changes and their potential for shaping the future is essential if we are to respond rationally to them.

EGGNOG RIOT: THE CHRISTMAS MUTINY AT WEST POINT. By James B. Agnew (Presidio Press, 1979. 211 Pages. \$12.95). Reviewed by Sergeant First Class Robert R. Cordell, Northwestern Oklahoma State University.

"There will be no spiritous liquor allowed." These words of West Point's superintendent, Sylvanus Thayer, were accepted by the cadets as a challenge rather than as a directive. And, so, Christmas of 1826 will be long remembered as the one that tested the Academy's authority against the customary celebration of the holiday by the cadets.

James Agnew has detailed the many events that occurred before, during, and after the 1826 holiday, and more than

being merely the story of a drunken brawl that resulted in a near-riot, his narrative tells us of the people who were involved and the reasons behind every event. Interwoven in his story, therefore, are the personalities of Robert E. Lee, Jefferson Davis, William J. Worth, Joseph E. Johnston, and many others.

It is also a story of Sylvanus Thayer and his attempts to create a strong and growing institution. Thayer was unyielding in principle while dedicated to a quest for excellence, and his spirit can be felt as the story unfolds. It was a spirit that prevailed in overcoming a major crisis that struck at the Academy's very heart.

THE ANATOMY OF THE ISRAELI ARMY. By Gunther Rothenberg (Hippocrene Books, 1980. 256 Pages. \$17.95).

The author, a professor of history at Princeton University, is a member of the United States Commission for Military History. In this book he examines the evolution of the Israeli Army and its organization, doctrines, and unique characteristics from its beginnings in 1907 in the secret military society called Bar Giora to 1978. His primary emphasis is not on the Army's military operations as such, but on the men and women who trained, led, and influenced it through its first 70 years.

Thus, Moshe Dayan plays a large role in Rothenberg's story, as does Yigael Yadin and Israel Tal. He assesses the effects on the Army of each of the men, traces the decline of the Israeli infantryman through the years with almost disastrous results in 1973, and concludes with an overview of the Army between 1974 and 1978 and the effects of outside political and diplomatic influences on it.

Since 1973, Rothenberg tells us that Israel "has managed to rebuild, reorganize, and re-equip its forces," even as several of its leading figures argued loudly and publicly how that should be done. He feels that the appointment of General Raphael Eytan as chief of staff in 1978 "may be a harbinger of a return to the old-fashioned military ethos" although "he realizes that the clock could

not be turned back to the age of infantry."

He also feels that the Israeli Army will still be "more than a match for the combined Arab armies" for the next five to seven years, but whether it "can maintain this posture over the long run is debatable."

For Israel, though, there is little choice — it must maintain a strong military posture or it will not survive. It must do this until "the Arab leaders have recognized that they cannot destroy the state by military means."

THE LEAVENWORTH SCHOOLS AND THE OLD ARMY, 1881-1918. By Timothy K. Nenninger (Greenwood Press, 1978. 173 Pages). Reviewed by Colonel Robert G. Clarke, OJCS.

The end of the Civil War brought retrenchment within the Army and a general neglect of the military services by the Congress as well as by the public. Moreover, as the Indian wars neared their end, the Army's one active mission reached its conclusion, and routine garrison duties began to occupy most of the Army's time and efforts.

Fortunately, a few far-sighted thinkers within the Army's ranks began to push for an education facility that would help produce professional officers for a future Army that would find itself more and more involved in international affairs.

In May 1881, therefore, a school of application for infantry and cavalry officers was established at Fort Leavenworth, Kansas, and this book traces the history of the school from its founding through the end of World War I when it began to take the shape of what is now the Army's Command and General Staff College.

The author discusses the evolution of the school's curriculum, the selection of the officers to attend, and the overall effect of the training that was given to the officers. He concludes that the Leavenworth system of schooling produced officers who thought alike and who knew the language of staff and command. He applauds the school for its early innovations, but faults it for underestimating the effects that scientific technology was be-

ginning to have on the art of war in the years immediately before World War I.

Readers interested in the history of the U.S. Army's educational system will want to add this book to their libraries, even as they hope that the author will soon write the second half of the Leavenworth success story.

LIMITED WAR REVISITED. By Robert E. Osgood (Westview Press, 1979. 124 Pages). Reviewed by Lieutenant Colonel James B. Motley, National Defense University.

In this concise, penetrating book, which critically examines the successes, ambiguities, and flaws of a limited war strategy, the author contends that the strategy of limited war has played a key role in United States foreign policy since the end of World War II. Osgood argues that even though the strategy met a severe challenge during the Vietnam War, it has continued to exist as a doctrine by adapting to the changing environment, both domestic and international.

Osgood provides a logical analysis of the strategy of limited war, and two of his most interesting chapters deal with the lessons of Vietnam and the post-Vietnam refinements to the strategy.

His position regarding limited war is quite clear. He believes that such a strategy for using force by limited part of U.S. military strategy as long as the country's vital interests overseas may have to be protected by armed force. The critical problem confronting the United States, he believes, is how to translate the containment of the Soviet Union "into a strategy for using force by limited means and for limited ends to support various peripheral interests."

This is a timely and well-written book. It is highly recommended for members of the military and political establishments, for the serious student, and for the general reader. The reader's time will be well spent.

WAR, MORALITY AND THE MILITARY PROFESSION. Edited by Malham M. Wakin (Westview Press, 1979. 531 Pages). Reviewed by

Major John S. Spence III, USAR.

The author, who is associate dean of the faculty and professor and head of the Department of Philosophy and Fine Arts at the United States Air Force Academy, has compiled and edited an impressive collection of essays that examine the ethics of the military profession and the morality of modern war.

The essays are of uniformly high quality, are well written, and represent a wide range of perspectives. In Part One of the book, the essays, which focus upon such traditional military values as honor, loyalty, honesty, and integrity, explore the various ethical issues that confront the members of today's military profession.

Of particular interest to the military reader is the now familiar debate between two prominent academic observers of this country's military forces, Charles C. Moskos and Morris Janowitz. Moskos examines recent trends in military organizations and perceives that the military service is changing from a "calling" to an occupation. Janowitz challenges Moskos's conceptual models and reaffirms the legitimacy of the military service as a profession.

In Part Two, the essayists address themselves to the basic issues of the morality of war and the morality of fighting a war, either conventional or thermonuclear. No simple answers or solutions are given. Rather, the various views serve to stimulate and enlighten the reader on a complex subject.

If there is an underlying theme to this book, it is that moral and ethical decisions must be made constantly by military officers. The material in this book is important for the professional education of all military officers, no matter their ranks or positions. Ethics and morality in the military services, as this book suggests, cannot be taught as a one-time subject at any one phase of our service schooling.

THE ROAD TO TOKYO. By Keith Wheeler and the Editors of TIME-LIFE Books (TIME-LIFE Books, 1979. 208 Pages. \$10.95.)

THE BATTLE OF THE BULGE. By William K. Goolrick and Ogden

Tanner, and the Editors of TIME-LIFE Books (TIME-LIFE Books, 1979. 208 Pages. \$10.95).

These two volumes in the TIME-LIFE World War II series detail the actions that occurred during three of the war's bloodiest ground campaigns as well as the United States Navy's tremendous support given to two of those campaigns.

The assaults on Okinawa and Iwo Jima are the main subjects of the first book. Each turned into a brutal, costly, slug-ging match; each is still the subject of some debate as to the need for it and, in the matter of Okinawa, as to the way in which the battle was fought.

The second volume concentrates on a battle that was fought half-way around the world from those in the Pacific, and a battle that proved to be one of the severest tests of U.S. arms during the war. The authors emphasize the events of the first two weeks of the battle and only lightly touch on the reduction of the German salient. Thus, their book is about evenly divided between the actions of the Allied and German forces.

They also tell us of the rather serious command problems that arose on the Allied side and of the Eisenhower-Montgomery confrontations of late December 1944 and early January 1945.

The narratives in both volumes, as is usual for this series, are complemented by superb pictorial essays.

RECENT AND RECOMMENDED

WARSHIPS OF THE WORLD: MAJOR CLASSES. By Bernard Ireland. Charles Scribner's Sons, 1976. 128 Pages. \$8.95.

WORLD WAR II FIGHTER CONFLICT. By Alfred Price. Hippocrene Books, 1980. 160 Pages. \$8.95.

BATTLEFIELDS OF BRITAIN. By John Kinross. Hippocrene Books, 1979. 128 Pages. \$14.95.

POLICE OF THE WORLD. By Roy D. Ingleton. Charles Scribner's Sons, 1979. 128 Pages. \$12.95.

CHIEFTAIN. By George Fort. Modern Combat Vehicles, No. 1. Charles Scribner's Sons, 1980. 128 Pages. \$14.95.

THE DIARIES OF PRIVATE HORACE BRUCKSHAW, 1915-1916. Edited by Martin Middlebrook. The Shoe String Press, 1980. 229 Pages. \$18.50

INFANTRY LETTERS



STARTING AN ARGUMENT

Dear Sir,

This letter is designed to start an argument — or at least a heated discussion. I think it is time we seriously questioned some tenets of faith concerning weapons. Specifically, is the shift from the recoilless rifle to the ATGM a good idea?

In the late 1950s and early 1960s, the Navy and Air Force both went the route of all missiles and no guns that the Army is following today. The lack of guns on our aircraft was a serious handicap to them in air-to-air combat in Southeast Asia until guns were mounted on them. The Navy had to go back and put old World War II 5-inch guns on some of its newest warships as well.

I have never spoken to a fighter pilot who wanted to lose his air-to-air missiles, but I have also never met one who didn't want his plane to have guns as well. The moral is that the two systems complement each other, and if either is missing the fighter is less effective. In our rush to deploy ATGMs we might do well to ponder that lesson.

ATGMs have many advantages over guns. We all know them; they've been listed time and again in FMs, TCs, and journals such as this one. But I seriously wonder whether enough consideration has been given to their *disadvantages*.

The only times I have heard this issue addressed the answer was, "Yes, there are some disadvantages, but we have to accept them in order to achieve standoff kill probability." (Older readers may recall a similar answer when the Pentomic division was questioned, only then it was, "We must accept this to be able to fight on the nuclear battlefield.") I wonder.

This answer is particularly interesting when it is given to National Guardsmen on annual training at Fort Drum. Outside of the ranges there isn't any place on that

post where you can see a kilometer, but lots of places where combat would be at ranges of less than 100 meters. The only AT weapon we have that is effective at less than 65 meters is the LAW, a weapon that was never designed to stop tanks in the first place.

I have heard a rumor that the Berlin Brigade has received permission to keep its 90mm recoilless rifles because of the minimum range of the Dragon. If this is so maybe we should be considering it for other units as well. Some Reserve Component leg infantry units are earmarked for Europe and have been told to expect to see a lot of combat in urban areas. If I had a company in one of those units I'd be very unhappy if we were sent over without some weapon other than the LAW that could engage tanks at less than 65 meters.

Mechanized units might be at a disadvantage with only missiles too. In addition to the minimum range problem, the ATGMs have a long time of flight, a slow rate of fire, and a greater susceptibility to countermeasures than guns have. By countermeasures, I mean the measures we've been taught to counter Soviet ATGMs, including suppressive fires, ducking into cover while the missile is in flight, and swerving suddenly just before the missile arrives. Do we think the Soviets are not training their soldiers to use the same measures against our ATGMs?

Smoke can restrict the capability of ATGMs even more than it does guns. After all, with a recoilless rifle, if a gunner gets a glimpse of a tank through the smoke for just long enough to get off a round, he can fire with some expectation of getting a hit. With a missile he must be able to see the tank not only long enough to fire but also long enough for the missile to travel to it.

If by the use of cover, smoke and the like armored vehicles get close to our

infantry, which weapon would be best able to stop them? At 500 meters? At 300 meters? A tank moving at 30 kilometers per hour can cover 500 meters in one minute, 300 meters in 36 seconds. A recoilless rifle with a good crew can fire six rounds in 36 seconds. How many could we fire with an ATGM, and which would get the most hits in that time? The answer is not necessarily the one with the higher hit probability per round.

Guns can be used to suppress infantry (including ATGM crews) with APERS-T. They can be used against small vehicles and weapon positions without worrying about the cost. They are cheaper than missiles and have less that can go wrong with them. Their crews can expect to fire live rounds at least once a year, rather than once in a lifetime for missiles (except in combat) and so will probably be better trained.

We might want to consider what other nations are doing. The Soviets and their allies in the Warsaw Pact have a recoilless gun (SPG-9) as well as their ATGMs. There are two SPG-9s per battalion. The West Germans still have antitank guns (90mm) as well as ATGMs. The Canadians have RRs (both 84mm and 106mm) as well as ATGMs in service. The British still have the Carl-Gustaf (84mm RR) in service, and I think they still have their heavy 120mm RR (Wombat) as well as their Swingfire ATGMs. The Israeli Army has RRs as well as missiles.

Do all these armies know something we don't? Or are we right while they're all wrong? I'm not sure.

Considering the record of the combat effectiveness of ATGMs, what do we have? The Yom Kippur War is usually cited as proof of the effectiveness of ATGMs. (And as proof that tanks are obsolete, but I don't think many INFANTRY readers believe that.) The reports I've received generally agree that of

all Israeli tank losses, ATGMs were not one of the bigger causes. (A figure of 17 percent was used in one report.) Three other means each had a higher loss percentage than that — mines, infantry rocket launchers, and high velocity guns (which included antitank guns as well as other AFVs).

Fifteen years ago the Army was sure that future tanks would carry missiles rather than guns. We developed the 152mm gun/launcher for the tanks of the future, but on the XM1 we are using a high velocity gun. Have missile firing tanks been a success?

Certainly ATGMs give us a valuable capability against tanks, and I wouldn't want them to be withdrawn from service. But do we really want to put all of our eggs in one basket? If the ATGM basket is wrong, we may not have the time we need to refit with guns.

My suggestion is to keep the RRs available. We may need them.

ABRAM MARK RATNER
CPT, USAR
Downey, California

CONTINUING THE ARGUMENT

Dear Sir,

We in the National Guard are now receiving the TOW and Dragon weapons. Since the Guard has historically suffered a lack of modern equipment, we hesitate to question the influx of such modern weaponry. However, I doubt the wisdom of completely replacing the 106mm and 90mm recoilless rifles in non-mechanized infantry units, whether they belong to the active or reserve components of the Army.

Field Manual 100-5 teaches us that light infantry in central Europe will be employed primarily in mountains, forests, and urban areas. In rugged mountain terrain, antitank weapons are likely to be irrelevant for the lack of armored targets. They will probably be used mostly to attack fortified enemy positions. Less rugged mountains will generally be forested. In forested areas, whether mountainous or not, fields of fire will be shorter and targets will be visible for very limited periods of time.

Therefore, the 3,000-meter range of the TOW will be unnecessary in most cases and the relatively slow flight of a wire-guided missile through wooded terrain could be a definite detriment.

Likewise, in urban areas, fields of fire will be limited. Seldom if ever will the 3,000-meter capability of the TOW or even the 1,000-meter capability of the Dragon be needed. Instead the infantryman is going to be concerned about the tank that may appear from around the corner at the next street intersection, and he is going to be handicapped by the 65-meter minimum range of his wire-guided missile. The LAW will be available, of course, but it does not have the killing power of the heavier weapons. Finally, in urban areas, antitank weapons are going to be extremely useful for blowing entrance holes in buildings and attacking fortified positions. But why waste an expensive wire-guided missile when a relatively cheap recoilless rifle round would work as well or better?

Perhaps these problems could be solved by having a mix of wire-guided missiles and recoilless rifles in the non-mechanized infantry battalion. The TOW could be used by the antitank platoon of the combat support company where long range fields of fire were available. The platoon could even be detached from the battalion when there was no need for it and used to reinforce units in more likely armor avenues of approach. The antitank section in each rifle company's weapon platoon could retain the 106mm recoilless rifle to use in support of the company. Its 1,500-meter range would be sufficient since no rifle company should position itself where it will be exposed to enemy fires that it cannot respond to with its small arms. Light infantry has to be a gut fighter, so why give it a long-range antitank weapon that will have to be positioned far away from the rifle platoons to avoid drawing long-range fires upon them?

The 106 has a long enough range to support the rifle company on reverse slopes, in forests, in cities, and on other restrictive terrain. It has no minimum range. It can be used against buildings and fortified positions much more cheaply. It is not the ultimate weapon by any means, but it seems better than the

TOW for the limited purpose of providing the heavy organic, antiarmor support for non-mechanized rifle companies.

As for the Dragon, a much better case can be made for using it in the rifle company. Its 1,000-meter range together with the 1,000-meter effective range of the M60 machinegun allows a defending rifle platoon to extend the range at which it can afford to engage the enemy. Even then, though, the rest of the platoon remains nothing but non-participating targets until the enemy is within range of their more limited weapons, so the use of the Dragon will have to be tempered by the degree of protective cover available to the platoon members.

Although I have had no personal experience with the Dragon yet, it strikes me as being at least as difficult a weapon to master as the 90mm recoilless rifle. If this is the case, why were weapon crews eliminated from the rifle company TOE when the Dragon was substituted for the 90mm recoilless rifle? Is the Dragon supposed to be a round of ammunition that anyone should be competent to fire like the LAW? I think not. Instead, it will be necessary to assign a Dragon crew within each squad. Who will it be, the SP4 automatic rifleman or grenadier? But a commander hates to silence his weapons when he needs antiarmor fires, so will it be the private with an M16 instead? One would think the squad's antiarmor weapon would be important enough to entrust to more experienced or more competent, dedicated soldiers who have earned promotion to SP4. So maybe we should give the Dragons and M16s to the SP4s and the automatic rifles and other jobs to the privates, thus further fouling up the TOE.

Should we not rather return to a TOE with Dragon crews? This may mean a return to the weapons squad, or it may mean that the two fire teams within a squad will no longer be identical. In any event, thought and study should be devoted to the question and further TOE changes should be made.

Having conceded that the Dragon belongs in the non-mechanized rifle company, I would suggest that the 90mm recoilless rifles also be retained. These should not be used in everyday operations but should be retained at company

or battalion level to be issued for use as needed. For example, when fighting in portions of a city where fields of fire are short and buildings are of heavy stone and concrete construction, some or all of the Dragons should be turned in and a limited number of 90mm recoilless rifles issued instead. At short ranges and especially against stationary targets, no great amount of prior practice would be needed to use the weapon satisfactorily. The main drawbacks would be the need to transport the extra weapons and the need to supply yet another item of ammunition. The benefits and cost savings seem to outweigh the disadvantages, however.

The retention of the 90mm recoilless rifle is not without precedent. The 9th Infantry Division at Fort Lewis, Washington, has been allowed to retain its 90mm rifles (INFANTRY, January-February 1980, page 20). I also understand that the Berlin Brigade (an organization probably more firmly committed to urban warfare than any other) has also retained its recoilless rifles.

In summary, I think the needs of the non-mechanized infantry can best be served by using the TOW only within the Combat Support Company's antitank platoon, using the 106mm recoilless rifle in the antitank section of the rifle company's weapons platoon, and using the Dragon at rifle platoon level, with the 90mm recoilless rifle available for use as needed. Not only would this weapons mix best suit light infantry in the terrain where it would most likely fight, it also should result in considerable cost savings, both for weapons and for ammunition.

RUSSELL L. BORAAS
CPT, Infantry
116th Infantry Brigade
Virginia Army National Guard

NATICK ANSWERS

Dear Sir,

Captain Long, in his letter (INFANTRY, September-October 1980, page 58), makes a number of valid points, but I do not share his concern over the use of the Vibram sole.

The Vibram sole has found wide ac-

ceptance in both mountaineering and hiking boots, which are frequently used during spring and fall months when mud conditions are encountered. In addition, standard and experimental Army mountain ski boots with Vibram soles have also been tested without traction problems in Alaska where there is mud.

This sole design was selected for the new combat boot because of its intended use as a general purpose boot to be worn under a variety of environmental and terrain conditions worldwide. The new boot, though, will not be worn in the tropics where very severe mud conditions are commonplace. For such an environment the Panama sole is superior and our current tropical boot will be retained for the tropics. Nevertheless, for general purpose use where a variety of terrain conditions are encountered, the Panama sole does not provide traction that is as good as either the current Chevron sole or the Vibram sole.

In summary, we believe the Vibram sole is the best general purpose sole now available, given the widespread terrain conditions our soldiers encounter. The new boot will undergo extensive field evaluation at several locations to determine its acceptability. If these test results do not support the choice of the Vibram sole, we will make appropriate design modifications before going into mass production.

ROBERT J. CUTHBERTSON
Colonel, QMC
U.S. Army Natick Research and
Development Command
Natick, Massachusetts

Dear Sir,

Reference Mr. Russell's comments on the new rough-side-out combat boots (INFANTRY, September-October 1980, page 58), first let me say that many of his comments have merit. There is, however, a misconception as to the reason for using flesh-out leather in World War II. Leather was in restricted supply, and it was used rough side out to allow more complete use of leather with visual defects on the smooth side, such as brands, briar scratches, barbed wire scars, and deep fat wrinkles.

The leather was not treated for water

repellency and it absorbed water quite easily. As Mr. Russell points out, this problem was complicated by our fetish for polished boots as the application of the heavy amounts of polish necessary to achieve a spit shine destroyed the natural ability of the leather to breathe. As a result, moisture was trapped in the boots and there was a high incidence of trench foot.

As a result of extensive testing in our laboratories we expect the new boot to offer a 400-percent increase in water resistance as compared to the present boot. This is accomplished by special treatment of the leather during the tanning process.

Additionally, the dyes and finish of the boot complement the new camouflage battledress. The new boot will not be shined as the application of waxes and polishes negates the water resistancy processing in addition to destroying its camouflage characteristics. It was not surprising to learn that in camouflage tests on uniform systems, failures were reported not because of the uniforms but because observers were able to visually detect the shiny boots of the test subjects.

The new boot will also have a protective toe, a quick-lace feature, improved traction sole design, and a softer leather lining to absorb natural moisture (perspiration) and improve comfort. The protective steel plate included in early prototypes will probably be eliminated from the production model to minimize weight and cost.

I am happy to say that the new boot offers a significant improvement in performance over the current footwear.

GEORGE R. RUBIN
Colonel, QMC
U.S. Army Natick Research
and Development Command
Natick, Massachusetts

ZULUS

Dear Sir,

I read with interest the article "The Barefoot Empire" in INFANTRY's May-June 1980 issue. Your readers may be interested to learn that the battlefield at Isandhlwana is today much the same as

it was on 22 January 1879. It is possible to trace the course of the battle from the white stone cairns that mark the mass graves and to follow the route of the few who escaped to Rorke's Drift.

What Mister Koster did not mention was that the Prince Imperial of France was killed during this campaign within sight of Isandhlwana; the actual place is marked with a memorial.

Zulu volunteers now form 121 Battalion of the South African Army, their unit color being a leopard skin, and theirs is possibly the only battalion in the world with its own brewery. Sorghum beer is their traditional beverage; they consider it a food.

S. J. McINTOSH

Editor, *Armed Forces*

Johannesburg, South Africa

REVIEWING THE REVIEWS

Dear Sir,

I have two complaints about your book review section in the March-April 1980 issue.

In the Recent and Recommended column, you had the *RAF Airborne Forces Manual* listed. I also received a copy of this book from the American Defense Preparedness Association for a review,

and I believe that your listing this book as "recommended" was a serious error.

As you undoubtedly know, this book is a reprint of sections of the various RAF manuals for airborne transportation of men and material. As such, it is of limited interest to almost everyone except the most fanatical airborne buff or the history researcher. I suggest that you try to look the books over more carefully before recommending them, since some underpaid person reading one of my favorite magazines may shell out 30 bucks plus tax and have a hard time getting the cash back.

The second complaint is less a complaint than an observation. In Colonel Gerhardt's review of the book, *Keine Kameraden*, he makes the statement that this book is the first to prove cooperation between *Wehrmacht* and SS *Ein-satzgruppen*. If the book cites the *Ein-satzgruppen* as being SS, it is incorrect; the EGs were elements of the SD and SIPO, with cross-attachments of *Waffen-SS* and *Wehrmacht* personnel.

This is not the first documentary evidence of the guilt of the *Wehrmacht* in the execution of POWs, Soviet or otherwise. I have in my collection a substantial number of photographs, many of which show men in apparent *Wehrmacht* uniform cooperating in "prisoner shoots." Numerous books are available, including the various Nuremburg Trial tran-

scripts, that, when you read them carefully, detail the fact that substantial numbers of POWs were handed over to the EG.

A detail that had not been revealed in these figures is the fact that substantial numbers of Soviet prisoners volunteered to serve in German units, often in active combat roles. I am told by a man formerly attached to the relevant German office, that it was common practice to list Soviet POWs as killed in order to get them to join the *Hiwis*; the men were worried that their survival in German uniform might injure their families.

This is not to say that the Germans, SD, SS, and *Wehrmacht* did not kill substantial numbers of people; it is to say that the figures are somewhat less severe than was suspected. An added incentive for the Soviet soldier to try to avoid capture, that is, to flee after surrender or capture, was the Stalinist regime's neat habit of arresting and trying POWs as deserters and sending them off to the Gulag. Read any of the recent Gulag books and see exactly what I mean.

Otherwise, I believe this was a fine review. Perhaps these added facts, which I am now working into a book, will be of help or of interest to Colonel Gerhardt.

ROBERT C. SMITH

Pennsauken, New Jersey



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From The Editor

This issue completes our 60th year, but before we retire our anniversary logo, which has served us so well in all of our 1980 issues, it is time to review those items that started out as requests from the field, from readership surveys, and from other sources and that ended up in the pages of INFANTRY.

Your requests for more about the Soviet forces led to the articles "A Soviet View — Reconnaissance in Exercises" in the July-August issue and the follow-on "Soviet Tactics for Overcoming NATO Anti-Tank Defenses, Part I" (September-October) and "Part II" (November-December). Requests for information on the activities of Allied armies produced "The Swiss System" in the May-June issue and "The French Airborne School" in the July-August issue.

Questions about Reserve Component training were covered in "Improving Reserve Component Infantry Training" in the January-February issue, "FTX Matrix" in the July-August issue, and "SHOCK" in the September-October issue. The expressed need for information on electronic warfare produced "The Electronic Battlefield" in the May-June issue.

Our goal of having MILPERCEN's Enlisted Infantry Branch representatives provide information to our Enlisted Career Notes section was fulfilled during the year and highlighted in the September-October issue.

Although the desires that INFANTRY's readers expressed in their answers to our readership surveys formed the basis for the list of articles programmed during the past year, that list was constantly added to by your letter requests. Other suggestions came from infantrymen attending resident courses at the Infantry School, and from the Infantry Magazine Editorial Policy Advisory Board, which met periodically to provide suggestions and reader feedback from their respective agencies on the articles published in recent issues. The numerous efforts of all of our contributors have made this a rewarding year for INFANTRY and for infantrymen throughout the world.

On behalf of the staff of INFANTRY, best wishes for the Holiday Season. We look forward to serving you in the New Year.

E.C.S.

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